

SIMPLIFIED POULTRY KEEPING

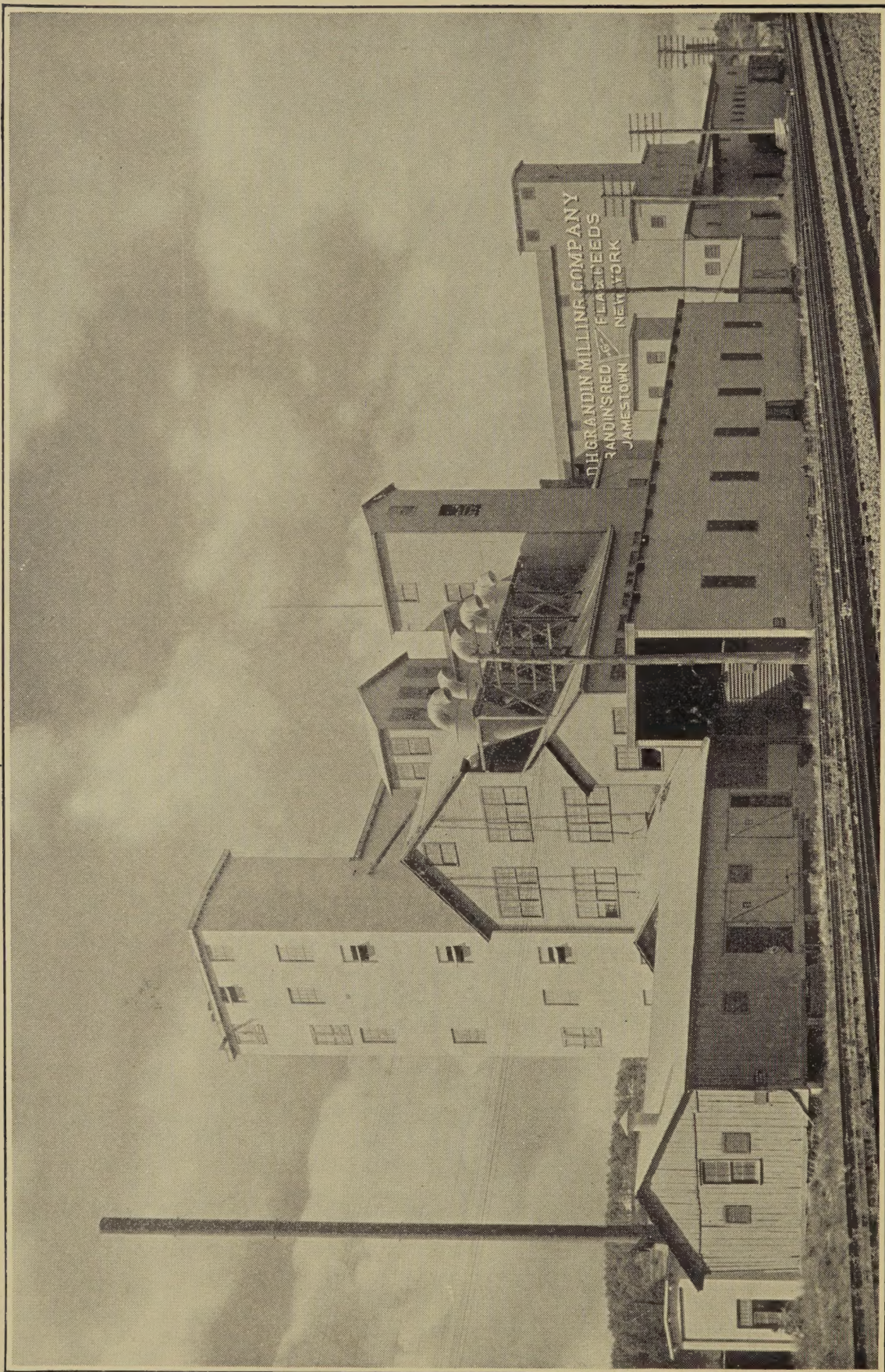


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POULTRY SERVICE DEPARTMENT

D. H. GRANDIN MILLING CO.
JAMESTOWN, N. Y.



D. H. GRANDIN MILLING COMPANY'S PLANT AT JAMESTOWN, N. Y.
This plant is equipped with everything in modern machinery which is necessary for the manufacturing of first quality feeds.

THE FACTS IN THE CASE

IT is undoubtedly true that the poultry business is facing a crisis. It is, however, a basic enterprise and will continue. Necessarily, there will be some radical changes made in the program. As matters stand today there is no need for the government to take measures to limit the poultry population. The results of some of the modern methods in poultry keeping have financially floored many poultrymen. As a matter of fact, figures furnished by the U. S. Department of Agriculture, as of May 1, 1934, indicate the number of chickens was down 15% from 1933 and 29% under 1930. It also furnishes the information that on the same date the number of layers was the lowest in ten years.

In the mad scramble for production, poultrymen the country over have lost sight of the main issue—flock health and vitality. Pullets have been so bred, reared, and fed as to abnormally increase production.

It is safe to say that the average flock mortality in the official egg laying contests of the United States is not less than 25%. In these contests there are the best birds, as we have reason to suppose, bred by many leading poultrymen. In every state losses from poultry diseases are increasing. Here is something to think about! No business can withstand such reverses forever.

The poultryman who has a well equipped plant, even though it be of one-man size, has necessarily invested a fairly large sum of money. He is in business. Therefore, he should conduct his affairs as does the successful business man. Adequate equipment enables him to make the best use of his hours of labor. He should have healthy breeding stock and not be cramped for room indoors or out. He should buy intelligently and sell carefully. Above all things else he should keep his place clean and orderly. The methods employed in rearing his stock should take into account the dictates of Mother Nature.

As manufacturers of poultry feeds we have always viewed the poultry industry from the business angle. Consequently, we have accepted and advocated to our customers only those methods in poultry keeping which our own experience has proven to be both *practical* and *profitable*.

In the composition of our feeds we use *always* the best of materials and our formulae are those that have stood the test of time.

We hope that you will find the reading of the following pages both interesting and profitable. The subjects discussed have not been treated scientifically, but rather with the sole idea in mind of helping the poultryman realize a more satisfactory return for his labor.

D. H. GRANDIN MILLING CO.
Jamestown, N. Y.

THE ONE-MAN POULTRY PLANT

There is a wide difference of opinion as to the equipment, the number of birds, and the number of acres required to establish a poultry plant on which one man can do practically all of the work and make a reasonably good living. Most writers start off with the number of layers, claiming that one thousand constitutes the necessary number. That is putting the cart before the horse. It would be better, it seems to us, to give the number of chicks and the brooding equipment first consideration.

The ideal one-man poultry plant should brood 2000 chicks. It should be borne in mind that chicks that grow profitably soon require lots of room. If they are hatched early the amount of space required for the regular brooding up to seven or eight weeks, which is 50 square feet per 100 chicks, must be doubled, because at this time the cockerels should be removed. In the animal kingdom as well as in the vegetable kingdom continuous growth means better results finally, so ample room must be made for expansion. On this point too many poultrymen fall down.

According to the law of averages the poultryman who hatches 2000 chicks may reasonably expect, taking losses into consideration, 900 pullets. Ten shelters of the Grandin type should be provided to house them on the range.

Now we come to the number of layers. No matter how well the chicks are bred a certain number will be second raters, and a certain number will be absolute culls. Quality must have due consideration if a profit is to be made. The poultryman who puts 900 pullets on the range has done well if he puts 600 *first class* pullets in the laying house. During the first year of laying, taking it for granted that they are well bred and have been properly handled, thirty of these pullets will die. Two hundred of them the owner will do well to keep over as breeders. This brings the final number of layers down to eight hundred. For each of these layers four square feet of floor space should be provided. (See illustration of Grandin Laying House on page 21.

It is strange, but true, that cockerels do not "pan out" nearly as well as pullets. In order to properly mate his eight hundred layers the proprietor of the one-man poultry plant will need sixty-four males and that will be all that he will be able to get from his nine-hundred cockerels. Advice as to the selection of breeding cockerels will be found on page 10 of this booklet under the heading "Cockerels".

Ten acres of well drained land is sufficient for a one-man poultry plant. It will provide ample room for the home garden, and that certainly is enough land on which to pay taxes. Location as to markets should be given careful consideration.

Strictly speaking there is no such thing as a one-man poultry plant. The plant described above is as small as can be expected to provide a comfortable living for a family of moderate size. No one man can do all of the work that there is to be done, provided it is carried on in a business-like manner. If there is no one in the family who can help out in the work there will be certain times when it will be necessary and profitable to hire.

In order to get the most out of a one-man poultry plant the owner should do his own hatching and breeding. He should do his own dressing whenever possible, because he is dividing his profits when he sells to the door buyer of live poultry.

IN GENERAL

BREEDING STOCK—As matters stand today the person in search of a clean, rugged, healthy flock of birds would have a bigger job on his hands than did Diogenes of old. Somewhere in the modern breeding program the poultryman has lost sight of the main issue which is *flock health*. Birds of wonderful productive powers have been bred. At the same time there has been a tremendous increase in mortality in both growing and laying stock. This condition exists as well in a large majority of the State accredited flocks. Mass breeding, mass production, and the tendency to lean too heavily on records of performance are elements which have entered very largely into the health degeneracy of our flocks.

Here is the condition. How can it be remedied? Recently we have noted a tendency to go back in our methods to principles that take into account the immutable laws of Nature. Breeders that are to be kept over are given exercise in the open—a splendid idea. This means better health for them and so for their offspring.

In our breeding program we must have only individuals that are in good physical condition regardless of parental records. We must bear in mind that a good layer is not necessarily a good breeder. She may have certain physical characteristics that render her totally unfit for the breeding pen. In the average flock of 900 layers culled as it is ordinarily done for breeding, there are not more than 400 *real* breeders. The mass breeding method has brought many woes and worries to the poultryman. The only ones to reap a benefit from it are the pathologists and the manufacturers of poultry remedies.

Just now we are sadly in need of healthier birds. We have gone beyond the limits of production that are consistent with flock health and ultimate profit. Poultrymen are in need of a program that will carry them along year after year with a reasonable profit and fewer worries. Such a program requires that the dictates of Nature be followed as closely as possible. Hens are in no sense machines but are still, in spite of all efforts to the contrary, things of flesh and blood and must be treated as such.

While thorough sanitation is a genuine help in reducing flock mortality, something else must be done. The only sensible and logical way to get at it is from the breeding end. Instead of crowding our pullets to the limit of production, getting our chicks from them and then disposing of them, (there is too much speed in that program) we should keep over one-third of the flock, if that number have proven themselves to be heavy layers. Time alone will tell whether or not they have the stamina to live and produce. If they do possess it, then they are very valuable in the breeding pen. By cutting down flock mortality, much is added to the profit per dozen of eggs produced.

EQUIPMENT—It is a well known fact that the mechanic who does the best work is always equipped with good tools, plenty of them, and they are always in excellent condition. The same thing is true of the poultryman. In order to get the most profit obtainable from his flock he must have ample equipment. He must have good brooder houses, good brooder stoves, good water founts, feeders, range shelters, laying houses and an ample amount of land on which to carry on his operations. All of these items should be taken into consideration and the poultryman should limit the number of birds he is to keep in accordance with the amount of land and equipment which he is able to have at his disposal. It should be borne in mind that whatever profits he may get must come from the good birds, and good equipment is absolutely necessary in order to produce them.

CLEANLINESS and SANITATION—It is an undeniable fact that successful business men conduct their establishments in an orderly manner. Their places of business are clean. There is a time and place for every operation.

The successful poultryman conducts his affairs along the same lines. His buildings and equipment need not be expensive in order to be attractive. Amid such surroundings better birds can be raised and larger profits realized. The careless and slack poultryman seldom makes a financial success of his enterprise. The investment necessary to properly equip even a one-man poultry plant automatically puts that poultryman in business and to properly safeguard that investment, he should conduct his affairs strictly along business lines.

Rapid strides forward have been made in the mechanics of poultry keeping, and in the field of nutrition, but the fact remains that the average poultryman is not as well off financially as he was five years ago. This state of affairs is not entirely due to the fact that too many eggs are required to buy a bag of grain, and that the market price of dressed poultry is too low. The only real hope of salvation that a poultryman has is not to increase production, but to improve the quality of his products.

IN THE BROODER HOUSE

LOCATION OF BROODER HOUSE—The brooder house should always be placed on well-drained land as near the dwelling as possible. It should be located so as to be well away from the shade of trees or other buildings. Ample room should be allowed for two yards in which the cockerels may be allowed to run in alternate years in case they are kept as capons or allowed to reach the soft roaster stage. The breeding cockerels will, of course, go on the range.

The continuous or permanent brooder house (See illustration of the Grandin Permanent Brooder House on page 8) has decided advantages over the single house in that it materially reduces both construction and labor costs. No brooder room should be smaller than ten by twelve feet. *No brood of chicks should number more than three hundred.*

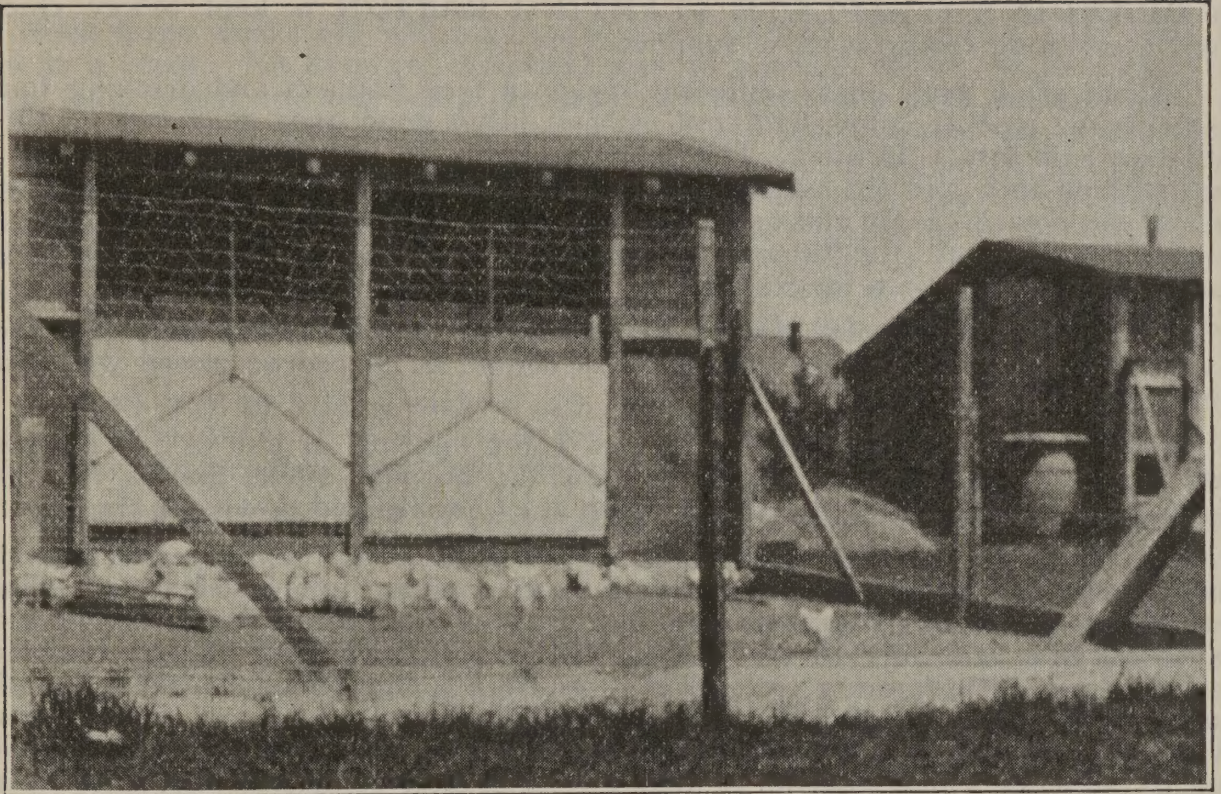
WIRE PLATFORMS—In general we are not in sympathy with the use of wire platforms. There are certain conditions, however, where their use seems unavoidable. It is safe to say that more chicks of the right kind can be raised without than with them. In rearing our chicks we should make every effort possible to keep in line with Nature.

GRASS RUNS—Runs should be provided in front of the brooder house *of at least the size of the brooding pen.* Early in the season these should be provided with windbreaks of boards or bags opened in the seams and attached to the wire on the North and West sides, in order that the chicks may spend more time in the open. As soon as the pullets are removed to the range, these yards should be *thoroughly* cleaned, lime slightly stirred on top and sown with a mixture of Red Top and clover. The vegetable growth, the action of the sun, rain, frost and snows, will put them in excellent condition by the time that they are again needed.

SAND RUNS—If the poultryman does not want to seed his runs each year he will get satisfactory results by enclosing them with eight-inch boards and covering them with five or six inches of coarse, sharp sand. If these boards are painted with crankcase oil before being nailed to the posts they will last a great many years.

In the fall two inches of this sand should be removed and the same amount of clean sand put in its place. By following this plan the poultryman will be in readiness for his early chicks when they need to get out of doors. Owing to frost and road conditions in many localities it is not good business to wait until spring before renewing the sand runs.

LITTER—The poultryman is often in a quandary as to what material to use for litter. Shavings (preferably dowel shavings) seems to be the most satisfactory material. In case these are not available, clean sharp sand of the



A flock of happy chicks that are enjoying the advantages offered by a sand run.

grade used for concrete work gives excellent results, both in the brooder house and laying house. A generous supply should be placed under cover in the fall in order that it may be readily accessible when needed. When two inches of sand is placed on a brooder house floor no cleaning will be required for the first month. If the sand is stirred occasionally with a garden rake it will keep dry. During that period there will be no great accumulation of droppings and much time and labor will have been safely saved on the cleaning end.

BROODING SUGGESTIONS—Before your baby chicks are placed under the brooder stove, be sure that you are ready for them. Being ready means that your house has been **THOROUGHLY** cleaned and disinfected and that your stove has been running four days with a temperature of approximately 95 degrees at the edge of the hover. Construct an enclosure of three-ply roofing paper, beaverboard, heavy cardboard, or wire covered with burlap, eighteen inches high around the stove at a distance of two feet from edge of the hover. Place the litter within this circle two days before the arrival of the chicks so that it will be warm and dry. The feed hoppers should be filled at the same time. *One inch of feeding space per chick is a good rule to follow.* Four drinking founts—one in each quadrant and providing one-half inch of drinking space per chick will be sufficient. Be sure to add enough warm water to remove the chill each time that the water founts are filled.

After the baby chicks have been placed within the enclosure, pick up a few and one at a time place their beaks in the water. Do the same in regard to the mash. In a few moments the chicks will all be eating or drinking provided that they were properly “ripened off” in the incubator. There will be no danger of the chicks eating the litter if the proper amount of feeding space has been provided and the right kind of hoppers (preferably those with grill top) are kept well filled with **GRANDIN’S COMPLETE STARTING RATION.**

The practice of feeding chicks on paper for the first few days and of covering the litter within the temporary enclosure with burlap can safely be discontinued by the poultryman who has employed them. When a generous supply

of **GRANDIN'S COMPLETE STARTING RATION** is kept before chicks their every food requirement is supplied.

There are a great many different styles of feed hoppers and drinking fountains on the market, good, bad, and useless. Buy good ones, take care of them and they will last a lifetime. The drinking fountains should hold not less than two gallons each and the pans should be round. The larger fountains are better for two reasons. In the first place the chickens are much more likely to be constantly supplied. In the second place, the proper temperature of the water can be maintained for a longer time on account of the larger bulk.

The drinking fountains should be thoroughly cleansed every day. As soon as the chicks are old enough the fountains should be placed on raised wire platforms.

There is a decided advantage in the night lighting of chicks. A ten-watt bulb or a dimmed lantern suspended over the brooder stove, results in much more even distribution of the chicks when they are bedded down for the night.

At the end of two or three days spread litter over the remainder of the brooder house floor and remove the circle from around the brooder stove. Place the feed hoppers and fountains one foot farther from the brooder stove each day until they are close to the walls. This arrangement will have a tendency to make the chicks more active. Keep your fire going as before but lower the room temperature. A good fire and low room temperature means happy chicks. When the room temperature is too high the baby chick loses much in vitality and so becomes a ready victim of that dread disease, coccidiosis. A baby chick can withstand considerable cold if it can get to the heat when it so desires. Don't kill your chicks with kindness. **VASTLY MORE CHICKS ARE RUINED BY OVERHEATING THAN BY CHILLING.** If you have observed a mother hen who stole her nest and appeared on the scene with a brood of baby chicks in the fall, I think you will agree that a chick will thrive and grow in low temperature, provided that it is able to get warm whenever it desires to do so.

In case a supply of succulent green food is not readily available **GRANDIN'S POULTRY GREEN FOOD** makes an excellent substitute. It may be kept before the chicks in a hopper at all times after they have reached the age of three weeks. It satisfies their natural craving for roughage and in most cases prevents the common trouble of feather pulling.

CARE OF MASH HOPPERS—A mistake that is often made by poultrymen is placing fresh mash on top of the old. If this program is kept up the day eventually comes when there will be some stale mash at the bottom of the hopper, and, if eaten by the chicks, will cause intestinal trouble. The better way to do is to allow the hoppers to get entirely empty once each day. If they are not entirely empty the mash which remains should be scraped to one end of the hopper.

CARE OF DRINKING FOUNTAINS—A shredded copper ball on a handle approximately six inches long is an excellent instrument for cleaning chick drinking fountains, water pans, and buckets. These balls can be bought at most hardware stores.

FLOOR DRAFTS—Floor drafts cause chilling and chilling results in an outbreak of diarrhea. Floor drafts are caused when the brooder house door is opened. This condition can be overcome by placing an eight or ten inch board between cleats fastened to the inner casing of the door. When preparing the brooder house for chicks the poultryman should be careful to cover every crack in the walls of the brooder house.

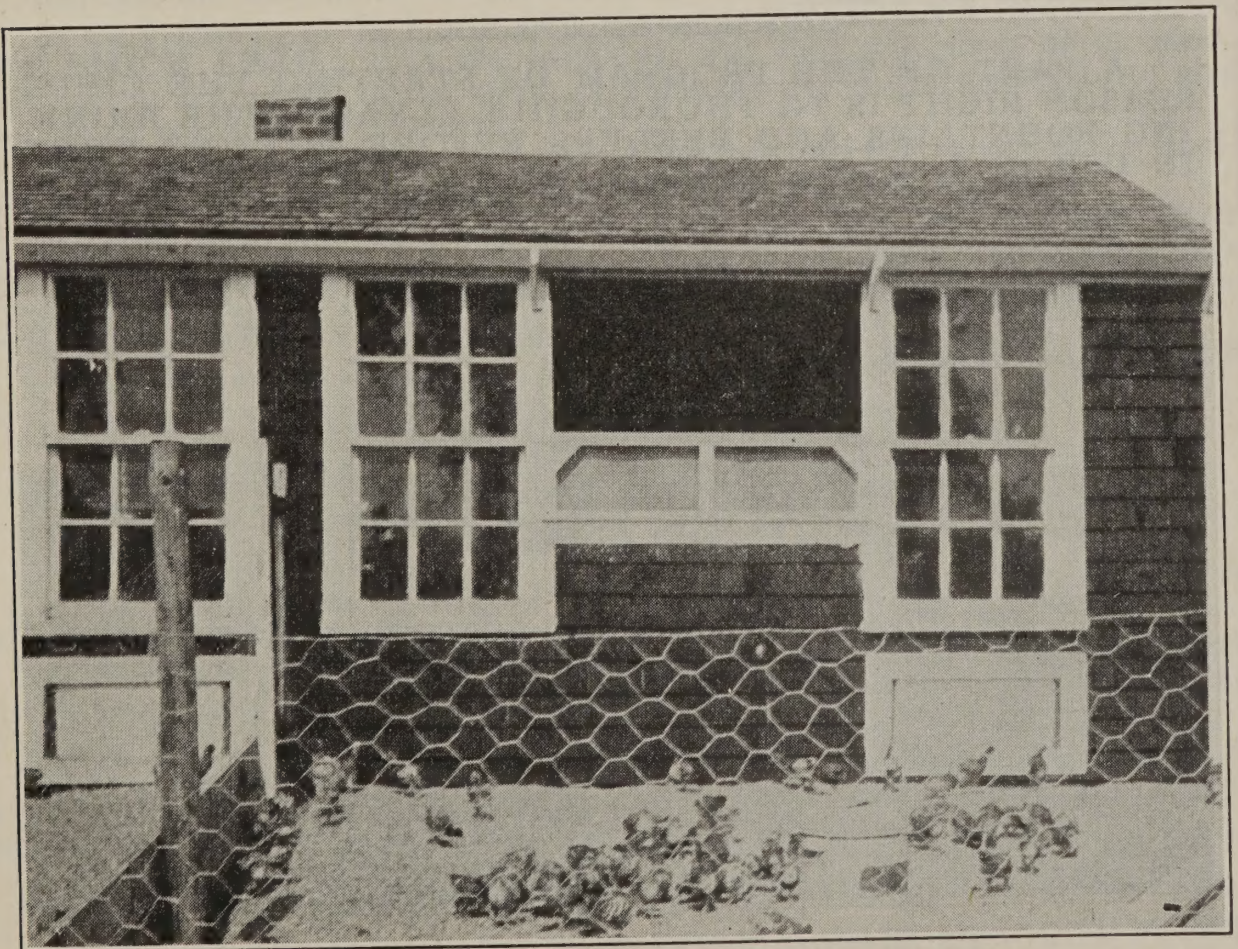
EARLY ROOSTING—Practically every poultryman has had his troubles in getting his chicks to go to roost. Much of this difficulty is brought about by the fact that the roosts are not provided early enough in the life of the chicks.

A chick three weeks old will take quite a sizable hop. That is a good time to put in a roost. An easy and practical way to provide roosts is to screw an eight inch board, the top being eighteen inches from the floor, on each side of the brooder house starting from the back. This board should be long enough to provide for four roosts ten inches apart. The roosts should be two by three inch joist. The board should be notched to accommodate the roosts edgewise. The top of the roosts will then be flush with the top edge of the supporting board. In case the brooder house is more than twelve feet wide it will be necessary to have a support in the center of the roosts. Only one roost need be put in at first. The others may be added as needed, but *be sure to put in that first one early.*

Roosts put up in this manner are easily removable and can usually be suspended to the roof of the room for which they are cut. If this cannot be done, one can properly mark and store them elsewhere.

PREVENTION OF COCCIDIOSIS—A milk flush treatment administered to chicks every three weeks until they have attained the age of twelve weeks, making a total of four treatments is advisable as a preventative measure against an outbreak of acute coccidiosis. The proper mixture for this treatment is one hundred pounds of **GRANDIN'S COMPLETE STARTING RATION** or **GRANDIN'S GROWING MASH**, depending on which feed the chicks are eating at the time, to which is added thirty pounds of dried buttermilk, or dried skim milk. Feed three days as a wet mash. The brooder house floor should be thoroughly cleaned on the second day after the milk flush has been administered.

Platforms covered with one-half inch mesh hardware cloth under the mash hoppers and water fountains help to prevent coccidiosis.



Chicks should be gotten out of doors as soon as possible. Exercise in the open air is as good for chicks as it is for girls and boys.

FINALLY

Watch your chicks closely. Keep them happy. If you are observant, you will know whether or not they are contented. The happy chick is the one that makes money for you. Cleanliness is an important factor.

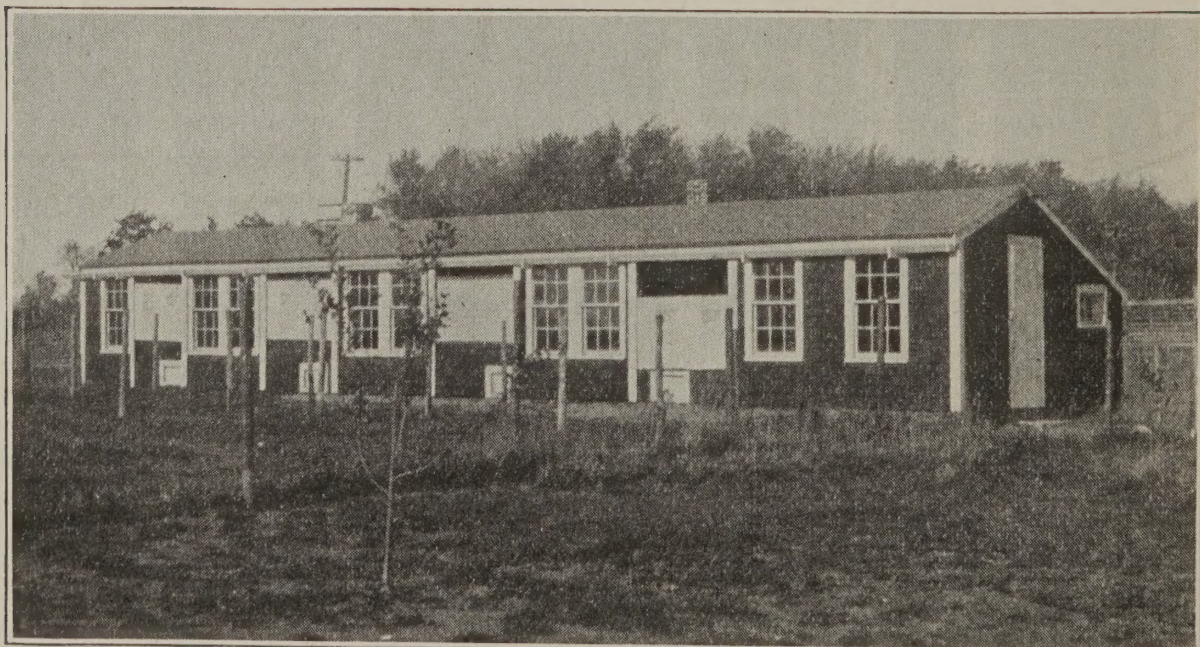
Variations must be made to all rules. The chick raiser with good judgment will know when to slow down and when to increase the heat. He will know when and how much to open or close the windows of his brooder house. Above all things else, **WATCH YOUR CHICKS CLOSELY. MAKE THEM HAPPY.** If you succeed in accomplishing that end, you will surely get a liberal reward for your efforts.

Climate is a big factor in chick raising. If you do not do your own breeding you should, by all means, buy your chicks as near home as possible. Buy them from the man whose plant you have visited and seen that his breeding stock and methods suit you. Avoid cheap chicks. Both time and money are wasted on inferior stock.

Acute coccidiosis is taking a tremendous toll each year from the poultrymen of our land. Those birds that survive its ravages are of questionable value. For that reason every effort possible should be made to avoid an attack of this dreaded disease. Well-bred chicks, properly cared for, have the inherent ability to resist disease. The floors of the brooding pens should be kept dry. *Dampness is a condition that must be avoided.*

PLENTY OF GRIT (HARD GRANITE GRIT) FROM START TO FINISH WILL DEVELOP PULLETS WITH LARGER GIZZARDS AND THE CAPABILITY OF HANDLING LARGER AMOUNTS OF FEED.

A PART OF THE PROGRAM OF STARTING THE CHICK SEASON RIGHT IS TO THOROUGHLY CLEANSE THE DRINKING FOUNTAINS AND FEEDERS BEFORE PUTTING THEM IN USE.



The GRANDIN PERMANENT BROODER HOUSE

It embodies at a low cost the best principles of modern brooder house construction. Complete working plans will be sent free upon request.

CHICK FEEDING GUIDE

FIRST WEEK

When chicks arrive from the hatchery or are taken from the incubator they should be placed within the enclosure about the hover and well supplied with **GRANDIN'S COMPLETE STARTING RATION** and water. The best results will be obtained by leaving the mash before them continuously.

After the fifth day chick-size grit should be kept before the chicks in a separate hopper. We recommend the use of granite grit because it is insoluble in acids and so does not break down the carefully prepared mineral balance of **GRANDIN'S POULTRY FEEDS**.

SECOND WEEK

In addition to **GRANDIN'S COMPLETE STARTING RATION**, **GRANDIN'S BABY CHICK FEED** may be added to the ration. A very small quantity should be sprinkled on top of the mash three times daily.

We are strongly of the opinion that the early feeding of hard grains enables the chick to build up a sturdy digestive tract which will be much needed later to ward off attacks of disease when the productive stage arrives.

Succulent green food should be provided at the beginning of the second week, preferably cabbage. The cabbage should not be chopped but suspended at such distance from the floor that the chicks will have to hop up to get it.

THIRD and FOURTH WEEKS

Continue feeding **GRANDIN'S COMPLETE STARTING RATION**.

Increase the amount of hard grain fed.

At the beginning of the fourth week change to **GRANDIN'S INTERMEDIATE CHICK FEED**. Give the chicks all that they will clean up at night. This may be fed on top of the mash. During the day it is a good plan to give them about one quart per hundred.

If the supply of succulent green food has run short or is not easily available fill a hopper with **GRANDIN'S POULTRY GREEN FOOD**.

It seems impossible to get away from the fact that we must have three sizes of feed hoppers. At about the end of the fourth week if the chicks have grown as they should they will need larger hoppers and more feeding space. See to it that their needs are provided for.

At the beginning of the third week, whenever possible, the chicks should be allowed to go out of doors.

FIFTH and SIXTH WEEKS

Continue feeding **GRANDIN'S COMPLETE STARTING RATION**.

Provide roosts.

Intermediate size chick grit should be used from this time until chicks are ten weeks old.

The houses will need more frequent cleaning now. This is the critical period. If your chicks are to be healthy, disease-resistant and future producers they must have the needed attention.

Watch out for crowding in the corners and be prepared to screen them off with wire cloth. Have the brooder room warm at night. This prevents huddling and huddling is dangerous.

SEVENTH to TENTH WEEK

Chicks should be gradually changed from **GRANDIN'S COMPLETE STARTING RATION** to **GRANDIN'S GROWING MASH** at the beginning of the seventh week.

GRANDIN'S INTERMEDIATE CHICK FEED should be fed in increasing quantities until at the end of the tenth week the amount of hard grains fed will nearly equal the amount of mash consumed.

Separate the cockerels from the pullets as early as possible. Both will do better.

TENTH to TWELFTH WEEK

Keep **GRANDIN'S GROWING MASH** before the chicks at all times.

Hen-size grit should be provided.

Weather conditions permitting the pullets will now go out on the range.

At the beginning of the tenth week **GRANDIN'S SCREENED SCRATCH FEED** should replace **GRANDIN'S INTERMEDIATE CHICK FEED**. Feed it liberally, giving them *all* they will eat at night and one-half of that amount in the morning. Hard grains should never be fed by the cafeteria system.

TWELFTH WEEK to MATURITY

Follow directions on following pages under the title "ON THE RANGE".

COCKERELS

When the cockerels have reached the broiler age select the most likely ones—those that show normal early maturity, have good shape and vigor and are well feathered. They should be placed on the range well away from the pullets and receive the same attention and care.

The **GRANDIN RANGE SHELTER** will accommodate about 65 cockerels.

When the cockerels have reached the soft roaster stage those that have not developed as they should may be put on the market. So many will fail to live up to the poultryman's expectations that it is advisable to place on the range three times as many cockerels as he will need for his breeding pens.



Cockerels reared under the above conditions go to the breeding pens with the vigor and "pep" that mean much eventually to their owner's pocketbook.



An ideal range with plenty of shade and forage.

ON THE RANGE

LOCATION OF RANGE—It is the aim of every poultryman to raise strong, rugged pullets with the conformation and vigor necessary to give a profitable year's production and still have the reserve of vitality to reproduce their kind. Pullets of this type cannot be raised on land that is heavy and poorly drained. On this type of land disease-producing organisms are omnipresent and are a constant menace to the health of the pullets that range there.

The ideal range must be of sufficient area—at least one acre for every 400 pullets. It should be well drained and well sodded. If the soil is a sandy loam so much the better, because this type of soil is more absorbent and much more readily cleansed by the action of the sun and rain. If the grass is tall it should be mowed. This will cause the pullets to range farther and at the same time they will be provided with a short and tender growth of grass which they will consume much more readily.

THE RANGE SHELTER—Too much cannot be said in favor of the range shelter. This idea is directly in line with Nature's program. Better pullets can be grown in them than in colony houses. Economically there can be no question as to their value. Pullets can be reared at less expense in this manner and with much less labor than in houses. The more pullets one has from which to select his layers the better off he is sure to be. On the point of sanitation there can be no argument as between the range shelter and the colony house. The Grandin Range Shelter (see illustration on page 13) is an excellent type of shelter and costs very little to construct.

Before the range shelters are put into use each year they should be carefully sprayed with a commercial mite destroyer and the roosts painted with carbo-

lineum. Throughout the summer the poultryman should frequently inspect his shelters to make sure that the lice and mites are not robbing him of his profits.

SHADE ON THE RANGE—Shade on the range is important. Natural shade is much to be preferred, but in case that cannot be had, good results are obtained by plowing a strip the full length of the range in the center, of sufficient width to allow the planting of four rows of corn or sunflowers. Wire should be run on each side of this strip until the plants have reached the height of two feet. Then the wire should be removed. The pullets will enjoy this shade. Their growth and splendid feathering will well repay the poultryman for the time and expense that he has incurred in providing it.

RANGE SANITATION—It is advisable to clean up around the range shelters about once each week. A lawn rake, hoe and shovel will be all the tools needed.

As soon as the range shelters are vacated in the fall they should be removed to the spot which they are to occupy the next season and staked down. The wire fence should be taken down, carefully rolled up, and placed under cover for the winter. Then the spot on which the range shelter set during the summer should be thoroughly cleaned and the holes about the shelter which the pullets have made by burrowing should be filled with loam.

If one does not want to go to the expense of plowing and reseeding his range, excellent results are obtained by raking (with a garden rake) every inch of the range and removing the rubbish. Then if he wants to do a first-class job he should go over it again with a fine-toothed lawn rake. In the early spring when the ground is still freezing and thawing grass seed dropped on top will catch readily and make satisfactory growth. A good mixture for this sowing is 1 peck timothy, 3 pounds Red Top and 3 pounds Red Clover per acre.

FEEDING ON THE RANGE—Hoppers of sufficient capacity should be kept near each range shelter, well filled with **GRANDIN'S GROWING MASH**. The grill type top trough is the most satisfactory. Pullets eat from them more readily than from the covered type. In case it should rain they may be placed under the eaves of the shelter. If, by chance, the feed should get wet no harm has been done. Pour off the water on top of the feed and do not put in any more until the troughs are empty.

On the range the pullets should be eating practically as much hard grain as mash. They should be given all of **GRANDIN'S SCREENED SCRATCH FEED** that they will eat at night and approximately one-half of that amount in the morning. The hard grains may be scattered in a long narrow strip. In this way more birds may eat at one time and it is much easier to feed on new ground.

A much better practice, however, is to provide each range shelter with a "V" trough ten feet long, using six and seven inch boards. A portion of the hard grains may be placed on top of the mash. There is always an element of danger in feeding hard grains on the ground. It must be remembered that it is through the medium of droppings that a majority of poultry diseases are transmitted.

CARE OF MASH HOPPERS—Extreme care should be taken that the pullets on the range do not eat any stale mash. Whenever possible the mash hoppers should be allowed to get empty each day. If this cannot be done the mash that remains should be scraped to one end of the hopper. No harm is done if the mash should happen to get wet by rain. The birds will eat it more readily, but no more should be put in until the hoppers are entirely empty.

WATER ON THE RANGE—When water is piped on to the range it is a common practice to lay the pipe on top of the ground. That means that on a hot day when the pullets (even as you and I) want and need cold water, they must drink hot water. It is a much better plan to plow a furrow and drop the

pipe into it. The sod can quickly be laid back over it with a manure fork or a hand potato digger. This slight extra expense and effort means much to the poultryman's pocketbook.

Nothing better can be found for drinking fountains on the range than open galvanized iron pans, approximately fifteen inches in diameter with perpendicular sides about five inches high. Pullets drink from them readily and it is very easy to keep them in a clean, sanitary condition. Pans of this sort can be purchased at most hardware stores.

These pans have the added advantage of being readily movable. If they are refilled three times daily (as they should be) and one provided for each range shelter, it is possible to have them in the shade of the shelter at practically all times.

WHEN TO HOUSE PULLETS—We advise leaving the pullets on the range until "the last gun is fired". The vitality stored up on the range will evince itself during the winter in the fewer losses by death and steadier egg production. Later on the "pep" and sturdiness of your chicks will bear witness to the vitality which their parents brought in from the range.

No matter how good their breeding and care a certain percentage of pullets when housing time comes will have failed to make the grade. Only those that possess good heavy bones and well muscled plump bodies should be placed in the laying house. The others should be sold for meat, not to the unsuspecting novice as layers. If the poultryman happens to have a surplus of pullets of the right type he will always find a ready market for them. He would be much better off to sell them than to crowd his pullets in the laying house. They should not be sold, however, until the poultryman feels certain that he has selected the best for himself.

A PART OF THE PROGRAM OF ENDING THE CHICK SEASON RIGHT IS TO THOROUGHLY CLEANSE THE DRINKING RECEPTACLES AND FEEDERS AND CAREFULLY STORE THEM. THAT'S ONE WAY TO MAKE MONEY IN THE POULTRY BUSINESS.



The GRANDIN RANGE SHELTER embodies the best of the old ideas with some valuable new ones which are original. Plans will be sent free upon request.



THE GRANDIN NEST SHELTER

It has always been a serious problem for the poultryman who keeps his pullets on the range until late in the season to provide a suitable nesting arrangement. He has picked up eggs on the ground everywhere and during a rainy spell those eggs have been very dirty, thus lessening their market value.

For a long time after the pullets were put in the laying house they have persisted in laying on the floor. The poultryman who uses the **GRANDIN RANGE SHELTER** and the **GRANDIN NEST SHELTER** will find that his pullets when housed will go on the roosts readily and will make immediate use of the nests, thus solving two of his major problems at a small cost.

THE GRANDIN NEST SHELTER equipped with twelve orange boxes (six on each platform) provides twenty-four nests and if properly located will provide sufficient nests for three range shelters. The very low first cost in comparison with the value of the eggs saved and the training given the pullets makes the nest shelter a first-class investment of time and money.

Hints on Construction

Frame 2" x 3"	Outside dimensions 4'-8" x 7"
Height to top of plate 3'-3"	Length of rafters (4 pairs) 34"
Length of plate 9'-6"	Width of board nailed to ends of rafters 5"
Distance from top of first platform to top of second 21"	
Width of top platform 3'-3"	

THOSE FENCES AROUND THE RANGES WILL HAVE TO BE TAKEN DOWN SOMETIME. THE MOST LOGICAL TIME TO DO IT IS IN THE FALL. CAREFULLY ROLL AND STORE THE WIRE. THAT'S A PART OF THE PROGRAM OF MAKING MONEY WITH POULTRY.

FINISHING BROILERS AND ROASTING CHICKENS

It seldom happens that the poultryman experiences difficulty in getting broilers and roasting chickens to grow sufficiently large frames, but he frequently encounters real difficulty in getting a satisfactory amount of meat on those frames in order to get the top market price for his product.

Broilers and roasters in crowded quarters do not put on flesh as readily as those that are provided with the proper amount of space in their houses and a reasonable sized outdoor run. In order to put on flesh the chicks should have ample roosting space in well ventilated quarters. The outdoor run should not be too large nor too small but should be of sufficient area to provide for exercise without crowding. Birds that are comfortable and happy will always give the largest returns for the amount of money that is expended in their behalf.

As to feed the question is easily answered. Give the birds all of the hard grain (preferably cracked corn) that they will eat from troughs during one hour morning and night. At the end of the hour the troughs should be removed or suspended where the birds cannot get at them. As a fleshing mash for broilers no better can be devised than **GRANDIN'S COMBINED CHICK AND BROILER RATION**. This should be kept in hoppers before the birds. Feeding it as a wet mash (wet with milk is preferable) at noon in such amount as will be cleaned up within one-half hour will bring surprisingly good results.

Less money need be expended on a fleshing mash for roasting chickens. The addition of twenty pounds of **GRANDIN'S CORN MEAL** to a bag of **GRANDIN'S GROWING MASH** will provide the poultryman with as good a fleshing mash as he need have. Fed as a wet mash at noon in the manner described above, he will get results that will satisfy both the poultryman and his customer.

Water enters very largely into the composition of a bird's body, and for that reason those that are being fattened should be well supplied with it at all times.

CULLING

A great many of the old ideas relative to culling seem to have "gone by the board", since J. P. Quinn of the U. S. Bureau of Animal Industry, after measuring the dressed carcasses and bones of 400 trapnested White Leghorn and Rhode Island Red hens came to the conclusion that neither the shape of a hen's body nor the shape of her head have any relation to her productive ability.

The net result of his observations is that there are only those four points listed below which are worthy of consideration in the selection of laying stock:

1. Earliness of maturity, indicated by an age of not more than 200 days at the laying of the first egg.
2. Rate of egg production recorded by trapnesting or indicated by bleaching of beak and shanks in yellow-skinned fowl.
3. Absence of broodiness.
4. Persistence of production as indicated by laying in August and September at the end of the first laying year.

While it seems, and undoubtedly is, folly for the layman to take issue with the scientist, the fact remains that the average poultryman cannot afford to use trapnests. It is also true that too few poultrymen have carried over selected yearlings as breeders. Points 2, 3, and 4 (with the exception of the reference to trapnests) are of immense value to the average poultryman in the selection of yearlings to be carried over as breeders or layers.

Only one point of the four applies to the selection of pullets as prospective layers. We are of the opinion that the poultryman who *cares for his growing*

stock as he should will still not go far amiss when he selects for his laying pens those pullets that have good weight, good depth of body, good lung capacity, and bright eyes in a well-proportioned head. We know that a bird of this type is active and that she is a good feeder. We also know that in order to produce well she must consume a lot of food.

There is ample reason for believing that the poultryman who selects his pullets along these lines will, in the end, get results that he would not get if he were to put his pullets in the laying house at random. When the time comes to select those birds which have proven themselves worthy of being kept over as breeders he will have more birds to make his selection from than he would have, had he selected his pullets on the hit-or-miss plan.

At any rate he is going to have a healthier flock and it must be conceded that health is a vital factor in the management of any flock.

IN THE LAYING HOUSE

HOUSING REQUIREMENTS—The character of the house in which hens are kept has a decided bearing on the profits which may be obtained from them. It is reasonable to expect birds that are kept in a well-ventilated, well-insulated and well-lighted house to lay more eggs than their sisters of the same breeding that are kept in a cold, damp, drafty and poorly-lighted house and fed on exactly the same rations. The difference in production soon takes care of the difference in housing cost.

In order to build a house which will fulfill all of the requirements noted above there need be nothing elaborate about its construction. Since the value of insulation has been so clearly proven a type of house may be constructed which will meet the needs of poultrymen in every clime. The insulated house is warm in winter and cool in summer.

THE GRANDIN LAYING HOUSE (See illustration on page 21) is designed to supply the demand for a laying house which shall be economical in construction and embody the essential principles of correct housing for layers.

LOCATION OF LAYING HOUSE—The laying house should be located on well-drained land and so placed that ample yard room may be had at both front and rear. These yards should be occupied in alternate years. There can be no argument as to the advisability of allowing those layers that are to be kept over to go out-of-doors during the summer months, nor has it clearly been proven that birds that are kept solely for laying do as well when continuously housed if the element of flock mortality is taken into consideration. Here again Mother Nature enters into the program.

REASONABLE EXPECTATIONS—It goes without saying that in order to get a continuously satisfactory egg yield from the laying flock changes must be made in the diet in order to meet the variations in weather and overcome the tendency to lag in production at certain periods. The flock yield should be such for the year that a reasonable profit is realized and the flock mortality kept at the minimum. Don't look for too big production, but follow a line of feeding that does not lower the vitality of the flock, and when a reasonably profitable laying year is completed you will still have a flock of birds to sell.

LAYING MASH—Just what is it logical to expect of a laying mash? In the first place it must be so balanced that it is not forcing. It should enable a hen or pullet to produce every egg that her breeding, physical make-up, and the care given her will warrant. At the same time she should be in good flesh and retain the "pep" and vitality necessary for the reproduction of her kind. If a laying mash is composed of the right kind of ingredients and properly balanced there can be no place for a so-called Breeders Mash or Fleshing Mash. *The average poultryman cannot afford to make his feeding program too complicated.*

GRANDIN'S LAYING MASH fulfills every requirement of the ideal laying mash. As to the quality of every ingredient that goes into its composition we remove our hats to no one. Our grains are all carefully recleaned and of the highest quality. We use no dried skim milk, but *dried buttermilk entirely*—one of the very best standard brands on the market. We use Nopco Cod-liver Oil according to the manufacturers' directions—thus passing on to our customers the benefit derived from exhaustive studies in vitamins by a large concern. Our mill is equipped with every machine necessary to the manufacturing of high-grade feeds. In short, we have left no stone unturned in our efforts to produce a line of feeds that will enable the poultryman to get a profit for his labor.

FEEDING PROGRAM—When the pullets are placed in the laying house the feeding program should not be changed materially for the first month. **GRANDIN'S GROWING MASH** should be fed. At the end of this time those birds that have reached the age of six months should be changed to **GRANDIN'S LAYING MASH**. **GRANDIN'S SCREENED SCRATCH FEED** should be scattered in the litter in the morning. At night the pullets should be fed all of **GRANDIN'S SCREENED SCRATCH FEED** that they will eat. A part of this may be fed on top of the mash and a part in V-shaped troughs. To replace the green feed of the range a hopper should be kept well filled with **GRANDIN'S POULTRY GREEN FOOD**.

When pullets are first taken in from the range they should have careful attention. They should be kept busy and happy in order that they may soon become accustomed to their surroundings. Scattering hard grains in the litter in small amounts is a strong inducement to exercise and is especially beneficial to those pullets that are taken in from the range in laying condition.

In November the only change that need be made in the feeding program is the substitution of **GRANDIN'S LAYING MASH** for **GRANDIN'S GROWING MASH** for those birds that are six months or more of age. From December first to March first the poultryman who feeds a wet mash daily at noon will find that his time has been well spent. This mash should be composed of six parts **GRANDIN'S LAYING MASH** and one part **GRANDIN'S POULTRY GREEN FOOD** by measure. It should be mixed to a crumbly consistency with milk placing it on top of the dry mash, and in such quantity that it will be entirely eaten within a period of one-half hour. If natural milk is not available dried skim milk, or buttermilk may be used at the rate of two pounds per hundred birds, and enough water added to attain the proper consistency.

As the weather grows warmer the feeding of hard grains in the morning may be gradually diminished until by April first the night feeding (all they will eat) will be sufficient to maintain body weight and condition.

WATER—No better, more sanitary, or economical drinking device has yet been discovered than the sixteen-quart pail partially sunken in a stand 30 inches square on top and 18 inches high.

LIGHTS FOR LAYERS—Lights are a great help in lowering the cost of winter eggs. When the weather is cold the layers need more feed than they do in moderate or hot weather. In winter the days are so short that the time for consuming that extra feed is not adequate. The hen should have sufficient time to eat the food required for her bodily needs beside consuming the material for making eggs.

Two forty-watt bulbs with reflectors for a twenty-foot room spaced 5 feet from the ends in the center of the area between the edge of the dropping board and the front wall will give an ample amount of light. A separate line of BX cable drawn in a line perpendicular to the front edge of the dropping boards carrying one ten-watt bulb in the center on a separate switch constitutes a satisfactory lighting system. When the front lights are switched off and the dim light switched on the birds immediately go to the roosts and distribute themselves without confusion or injury. In our own experiments this system of

lighting has proven infinitely superior to the use of dimmers and is well worth the extra cost involved.

How much use should be made of lights and whether they should be used in the morning or at night are much discussed questions. For the average poultryman it seems to us that night lighting of layers is the best method to follow. When the hen gets down from the roost in the morning in cold weather she should have immediate access to clean fresh water from which the chill has been removed. The normal poultryman is not anxious to get up in the wee hours of winter mornings to see that his birds are provided with clean water of the right temperature. If the lights go on automatically at four o'clock, the hens must wait for him to get up before getting water or they must drink stale water from heated insulated fountains.

There is another advantage in night lighting. The poultryman gets up at daylight. He is on the spot and he knows just when to turn the lights on and when to turn them off in order to give his birds the exact length of day which he thinks they should have. The amount of daylight will vary according to the season and weather conditions. In following the night system of lighting the poultryman is "on deck" all of the time. When he snaps on his dim lights he can empty his water buckets, see to the room ventilation and go into the house with the feeling that all is secure for the night.

As to the number of hours of light that should be given hens there is room for debate. Too many hours are worse than none at all. There is a happy medium, however, which brings gratifying results. Twelve hours of light seems to give the best results for breeders. Fourteen hours of light for birds that are kept solely for egg production is sufficient for the maintenance of proper body condition and profitable production.

LITTER—What to use for litter in the laying house is often a vexing problem for the poultryman. No one kind of litter seems to give as satisfactory results as the combination of oat straw and shavings. One inch of shavings on the floor and a liberal amount of oat straw on top will make a litter that is absorbent and keeps the droppings from the floor. The straw will last much longer in combination with shavings because it does not come in direct contact with the floor when the hens are digging it over in search of hard grains.

SANITATION AND CLEANLINESS IN THE LAYING HOUSE—Cleanliness in the laying house is an important item in the poultryman's program. It is poor business for him to allow his houses to get in filthy condition. The dropping boards should be cleaned off at least twice each week and the litter changed as often as it need be. At least once each week the drinking receptacles should have a thorough washing. So much of a poultryman's success depends on the amount and condition of the water that he furnishes his layers, that it is difficult to understand why so many poultrymen are careless in this respect.

At least once each year the good poultryman, like the good housewife, will have a thorough housecleaning. The best time to do this is in the spring. The floors, walls and windows should be thoroughly cleaned. The walls should be sprayed with Carbola and the dropping boards with a good commercial louse destroyer. The roosts should be painted with Carbolineum. After this sort of housecleaning the poultryman need not give his layers much of his time during the summer. This is especially true if they are allowed to go out of doors. The regular routine of feeding, watering and cleaning the dropping boards is all that remains to be done.

YARDS FOR LAYERS—Disease, vices and low vitality have resulted from the confinement of adult birds during the warm months. If the poultryman himself were compelled to live within doors continuously without exercise in the open air and sunshine, it goes without saying what would happen to his health. For that reason we have never adopted the idea of the double deck

laying house. It must always be borne in mind that only good birds pay a profit, that profitable birds are healthy and that flock health can only be maintained by providing hens good clean living quarters and exercise in the open. It is better to have one story of good birds than two stories of indifferent ones.

INTRODUCTION OF NEW BLOOD—The poultryman should exercise extreme care when introducing new blood into his flock. Do not be influenced by glowing "ads" or by records at egg-laying contests. Many a poultryman who was getting on well has received a disastrous setback from disease brought to him by the new blood which he introduced into his flock, hoping to receive improvement thereby. The best way to introduce new blood into one's flock is by buying hatching eggs. In that case he starts right. He knows the size of the egg from which his new stock is hatched. He watches the pullets and cockerels develop. He knows how they feather and their rate of maturity. If the pullets start to lay early enough, if their egg size is satisfactory, he should use the cockerels in his breeding pens. In other words the pullets will tell the truth about the cockerels. If the pullets do not fulfill his expectations he should not put them or the cockerels in his breeding pen, no matter how much was paid for them. There is nothing to be gained by the introduction of new blood in one's flock unless that stock is as good or better than one's own birds.

In any case do not buy new stock or eggs from any breeder until you are thoroughly satisfied that his stock in every respect is as good or superior to your own.

NESTS—A nest should be provided for every five hens. In case trap nests are used there should be one for every three hens. It is good business to supply an ample number of nests. The breakage avoided will soon take care of the investment. Landing boards should be provided and the nests so located as to be easily accessible. It should be borne in mind that Reds and Rocks do not fly as easily as Leghorns and that thumps do them no good.

CARE OF MASH HOPPERS—Many poultrymen are careless about the feeding of mash to their layers. It is not enough to keep the hoppers well filled at all times. They should be well filled with *clean fresh* mash. It is a dangerous practice to constantly place fresh mash on top of the old. Every time that mash is placed in the hopper the old should be removed and placed on top, or scraped to one end. This operation requires but very little time, but is of great importance.

CARE OF EGGS—There always has been, and it is reasonable to suppose that there always will be, poultrymen who are careless about the handling of their eggs. Yet these same poultrymen growl because they do not get as much for their eggs or find as ready a market for them as the poultrymen who properly handle their eggs and put a first-class article on the market.

In order to get the highest market price for eggs the suggestions listed below will be found of value.

1. Unwashed eggs keep better and look better than those that have been washed. Clean litter, clean dropping boards, and clean nesting material help to bring about this desired end. Wash as few eggs as possible.

2. Infertile eggs retain their freshness much longer than fertile eggs. As soon as the breeding season is over the males should be removed from the pens immediately.

3. Eggs should always be collected at least twice daily. During extremely hot or cold weather they should be collected not less than three times daily.

4. The temperature of the room in which the eggs are kept should be even and cool. Practically every poultryman has a cellar and he should use it for storing his eggs.

5. Eggs should be allowed to cool before they are packed in cases. Bas-

kets are better than galvanized iron pails for collecting eggs, due to the fact that they are porous and the eggs will sooner lose their animal heat in them.

6. Every person who produces eggs for market should for his own protection, as well as that of his customers, invest in an egg grading scale.

7. If one has a select retail trade it is advisable to purchase a candling light in order to detect blood spots, cracks, etc.

8. A neat attractive package always helps to sell merchandise. For that reason the poultryman should always have clean new flats and fillers in his egg cases when eggs are to be shipped.

9. The careful poultryman will clean up on his stock of eggs every four or five days during warm weather, and once each week during the cool months.

AVOIDING WINTER MOLT—In order to intelligently apply a remedy the causes of the trouble must be known. There are two major causes of winter molting of layers—improper housing conditions and loss of body weight. The poultryman who houses his layers comfortably during the winter months, and this means that the house is dry, and warm enough so that there are no frozen combs or wattles, has done something important toward avoiding a winter molt.

The body weight of the layers must be kept up. In order to accomplish this end hard grains must be fed liberally—so liberally that *every* bird goes on the roost at night with a full crop. During severe cold weather one-half of the amount of hard grain fed at night should be fed in the morning. Of course, at all times the hoppers should contain mash.

Water, necessarily, enters very largely into the discussion of how to avoid winter molting since 65.5% of a whole egg, and an equal percentage of a hen's body, is composed of water. In order to promote a maximum intake the water should at all times be of such a temperature that the hen can drink it in large quantities without being required to raise it to her body temperature. Above all things else do not neglect the water supply. Provide receptacles of good size and see to it that they are kept well filled with water from which the chill has been removed. You cannot afford to neglect 65% of your business.

Keeping the layers "under lights" twelve to fourteen hours daily increases the food and water consumption, thus lessening the possibility of a winter molt.

TRAP NESTS—Trap Nests certainly have played a large part in the development of the modern hen. It is said that "there is a time and a place for everything." While not every poultryman can afford to trap nest for the year it is true that many poultrymen who are doing their own breeding would find it decidedly to their advantage to trap nest at least for a part of the year those birds in the matings from which they contemplate selecting their breeding cockerels.

The ideal plan for a poultryman to follow would be to select what in his own judgment were his best one hundred pullets and trap nest them for one year. The following year those that made sufficiently good records should be mated. From such a mating the poultryman would be able to get cockerels which would build up both the health and production of his entire flock. To the observant poultryman such a program would have a decided educational as well as monetary value.

EGGS FOR HATCHING

At least a month before he begins to save hatching eggs the poultryman should have completed his final culling and decided from just what hens he is going to save his hatching eggs. His breeders should be in first class physical condition, if the desired fertility and hatchability is to be obtained. *They should be the cream of his flock.* The breeding pens should be clean, dry, and well ventilated. If the breeders are fed **GRANDIN'S LAYING MASH** and **GRANDIN'S SCREENED SCRATCH FEED** the poultryman may rest assured in the knowledge that his birds are well fed.

Hatching eggs should never be washed. Washing removes the protective coat and causes too rapid evaporation during incubation, therefore, the poultryman should supply his breeders with plenty of clean nests.

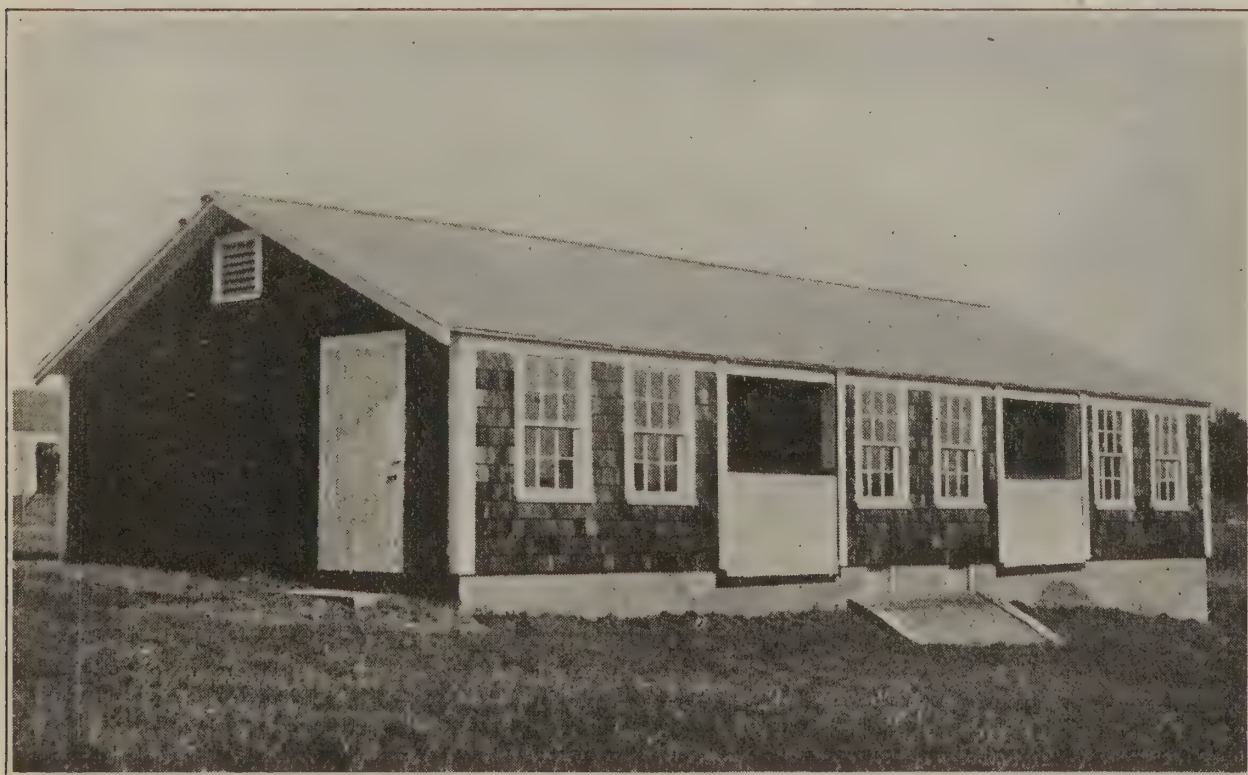
Shape, size and color of eggs are all inheritable factors. For that reason only such eggs as are of the right size, shape, and color should be placed in the incubator. The consuming public buys eggs largely upon appearance. When it calls for brown eggs it wants them to be brown. When it calls for white eggs it wants them to be chalk white. The poultryman can by persistent selection of his hatching eggs give the consuming public what it wants and is willing to pay for.

The public wants eggs weighing twenty-four ounces or more to the dozen. Consequently he should put only those eggs in his incubator that weigh from twenty-four to twenty-six ounces per dozen. If he is to produce eggs of the right shape, shell texture and color those are the kind he should incubate. One does not plant horse chestnuts with the expectation of raising beans.

Eggs that otherwise would be good hatching eggs are sometimes spoiled in the handling. Hatching eggs should be collected not less than four times during the day and picked over at each collection. Those selected should be placed in a case and immediately covered with a flat. The case should be tilted by a brick or a short piece of 2" x 4" joist. The position of the brick or joist should be changed in the morning and at night, passing around the case. By thus changing the position of the eggs much is added to their hatchability.

The room temperature where hatching eggs are stored should not run higher than 55 degrees nor lower than 45 degrees. A cellar is the best place to store hatching eggs on account of the humidity. Eggs intended for hatching should not be stored more than ten days because after that time the hatchability decreases rapidly.

CLEAN POULTRY HOUSES, CLEAN LITTER, AND GOOD VENTILATION ARE ESSENTIAL TO LOW MORTALITY AND HIGH PRODUCTION



A unit of the GRANDIN LAYING HOUSE.
Complete working plans will be sent free upon request.

4-H CLUB WORK

It is an indisputable fact that there must be some outlet for the superabundance of youthful energy. Up to the present time no more worthy organization has come into being to direct that energy into lines that are both pleasant and useful than the 4-H Club. The boys and girls who make up its membership will be the men and women of tomorrow. The many useful things that they learn to do and the clean type of entertainment which they enjoy cannot help but have a beneficial influence on their lives in later years. It frequently happens also that parents themselves are aroused to keener interest in their own work as a result of being interested in the 4-H Club activities of their children.

We have received several letters from 4-H Club boys located in different sections of the East who have won prizes in their dairy or poultry projects with the aid of **GRANDIN'S FEEDS**. We are much interested in 4-H Club Work and would be pleased to give assistance to any club member whenever it may be legitimately done. If a club member desires advice on subjects pertaining to poultry husbandry he, or she, may feel free to write to our Poultry Service Department. If advice is wanted on dairy projects write to our Dairy Service Department. We will be glad to help to the best of our ability.



Interior view of a portion of the Storage Warehouse of the D. H. Grandin Milling Co., showing method of piling the superior quality ingredients from which **GRANDIN'S FEEDS** are manufactured.

Every ingredient used in **GRANDIN'S FEEDS** is carefully chosen and the balance is right. **THE RESULTS PROVE IT.**

Before deciding what feed you will use during the coming season it will be a good business move for you, if you did not use **GRANDIN'S** last year, to consult your local **GRANDIN** dealer as to prices. If you did well last year you may rest assured that you will do better this year if you use **GRANDIN'S**.

GRANDIN'S BABY CHICK STARTER

WITH BUTTERMILK—COD-LIVER OIL

GUARANTEED ANALYSIS

COMPOSED OF

Protein	14%	Pure Dried Buttermilk, Concentrated Cod-
Fat	4%	liver Oil, Ground Whole Yellow Corn, Hom-
Fiber	5%	iny Feed, Ground Whole Wheat, Ground
Carbohydrates	60%	Hulled Oats, Alfalfa Leaf Meal, Pure Wheat
		Middlings, Bone Meal, Calcium Carbonate and
		Salt.

For the benefit of those who believe that better results are obtained by feeding mash and finely-cracked grains separately to their chicks, we manufacture, as we have for many years, **GRANDIN'S BABY CHICK STARTER**. This feed has stood the test of time. It is clean and wholesome. It contains considerably more lactic acid than most starting rations on the market and as a result, chicks fed on it are much less liable to fall victims to coccidiosis. Every ingredient of this feed is carefully chosen. The **RESULTS PROVE IT**.

GRANDIN'S BABY CHICK FEED is composed of fine cracked yellow corn, cracked wheat, and steel-cut hulled oats. It is clean and free from dust. It is a sensible feed wherein you get your money's worth. Used in combination with **GRANDIN'S BABY CHICK STARTER** the results are what you have been wanting.

GRANDIN'S COMPLETE STARTING RATION

WITH BUTTERMILK—COD-LIVER OIL

GUARANTEED ANALYSIS

COMPOSED OF

Protein	16%	Pure Dried Buttermilk, Concentrated Cod-
Fat	4%	liver Oil, Ground Meat and Bone, Fish Meal,
Fiber	6%	Alfalfa Leaf Meal, Pure Wheat Bran, Pure
Carbohydrates	50%	Wheat Middlings, Ground Whole Yellow Corn,
		Ground Whole Wheat, Ground Hulled Oats,
		Ground Whole Barley, Hominy Feed, Pulver-
		ized Heavy Oats, Calcium Carbonate and Salt.

GRANDIN'S COMPLETE STARTING RATION is as nearly complete as any starting ration can be. It is in line with the latest discoveries in nutritional values. Its perfect balance is reflected in the sturdiness, "pep", and even development of the chicks.

There are no cheap ingredients in **GRANDIN'S COMPLETE STARTING RATION**. No feed manufacturer uses higher grade ingredients than enters into its composition because we use the *best*. In reading the table of contents above you will note that we use *only* dried buttermilk, and that liberally. Dried skim milk does not appear. We use *only* Concentrated Cod-liver Oil manufactured by one of the standard and best known concerns.

GRANDIN'S INTERMEDIATE CHICK FEED is composed of only three ingredients—Cracked yellow corn, wheat and hulled oats. It is clean. No better mixture could be made. Compare it carefully with others and you will see the difference. You do not have to take anyone's word for that.

If the quality of **GRANDIN'S FEEDS** in which every ingredient is plainly visible is better, then it is reasonable to assume that the same condition holds true in the mashes.

GRANDIN'S COMBINED CHICK AND BROILER RATION

A COMPLETE RATION FROM START TO FINISH

GUARANTEED ANALYSIS

COMPOSED OF

Protein	15%
Fat	4%
Fiber	6%
Carbohydrates	50%

Pure Dried Buttermilk, Concentrated Cod-liver Oil, Ground Meat and Bone, Fish Meal, Ground Whole Yellow Corn, Hominy Feed, Ground Whole Wheat, Ground Whole Barley, Ground Hulled Oats, Pure Wheat Middlings, Alfalfa Leaf Meal, Calcium Carbonate and Salt.

GRANDIN'S COMBINED CHICK AND BROILER RATION offers many advantages to the shrewd buyer of poultry feeds:

1. Every ingredient of which it is composed is of the highest quality obtainable and the combination is such that every nutritive requirements of the chicks is provided from day-old to broiler age.
2. It is a first quality **STARTER** for baby chicks whether they are raised on the floor or in batteries. *It requires no additions.* It is complete in every way.
3. The texture is such that the chicks eat it *all*.
4. It produces splendid bodied, well feathered broilers with the clean yellow skin and legs that are the outward evidences of perfect condition.
5. It grows pullets rapidly, but at the same time furnishes them with the rugged frames which are necessary for sustained egg production. The pullets grown on **GRANDIN'S COMBINED CHICK AND BROILER RATION** are smooth, glossy feathered birds that are pleasing to the eye and profitable to own.
6. **THE PRICE IS RIGHT.** The market price of broilers has never been so low but that birds fed on **GRANDIN'S COMBINED CHICK AND BROILER RATION** would give the producer a fair margin of profit.

In feeding **GRANDIN'S COMBINED CHICK and BROILER RATION** the same methods in general should be followed in caring for the baby chicks as has been previously described in this booklet. As the chicks grow older they will require larger feeders and more feeding space. See to it that they are properly provided for in these requirements. In order to get the best results the hoppers should be kept well filled at *all* times.

When the chicks have attained an average weight of two pounds, it is advisable to begin the feeding of hard grains in order that the flesh of the broilers may become firmer and the pullets become accustomed to eating the hard grains which from that time on should become a regular part of their rations.

GRANDIN'S GROWING MASH

WITH BUTTERMILK—COD-LIVER OIL

GUARANTEED ANALYSIS

COMPOSED OF

Protein	15%
Fat	4%
Fiber	8%
Carbohydrates	50%

Dried Buttermilk, Concentrated Cod-liver Oil, Ground Meat and Bone, Corn Gluten Feed, Yellow Corn Meal, Hominy Feed, Alfalfa Meal, Wheat Bran, Wheat Middlings, Pulverized Heavy Oats, Calcium Carbonate and Salt.

GRANDIN'S GROWING MASH is a carefully balanced ration that accomplishes all that its name implies. Above all things else to be desired in the development of a pullet or cockerel is a strong, rugged frame. **GRANDIN'S GROWING MASH** will grow the kind of frames that you like to look at. We want vigor, "pep" and glossy feathers. These are characteristic of the birds grown on **GRANDIN'S GROWING MASH**.

A mistake often made by poultrymen in their anxiety to get eggs is to change their birds too early from a Growing to a Laying Mash. *The pullets that are bred for production will lay soon enough without the incentive of a high protein ration.*

The athlete who is in training for some event which is going to require the best that there is in him does everything possible to put himself in the best of physical condition. When we expect a pullet to produce for us two hundred or more eggs within a period of twelve months we are expecting a tremendous physical effort from a small body.

In order that she may live up to our expectation we must help her with care and rations to get in perfect physical condition for the long grind.

A builder of engines does not expect to set his machine going until it is complete in every detail. It is entirely unreasonable for a poultryman to expect continued high production from his pullets unless they start laying when they are *fully grown* and every organ is in perfect condition to function.

In the preparation of **GRANDIN'S GROWING MASH** all of these factors have been taken into consideration. To accomplish the desired end we have followed very closely the best sources of information obtainable as to balance and nutritional values. After many years of painstaking effort we have been able to produce a Growing Mash which is so nearly correct in balance that pullets fed on it, provided that they have the right breeding back of them and are properly cared for, will arrive at the age of production, healthy, vigorous, and in real "fighting trim".

It very frequently happens that one hears poultrymen talk about "holding back" their pullets from production. When **GRANDIN'S GROWING MASH** and **GRANDIN'S SCREENED SCRATCH FEED** are fed as directed in this booklet the poultryman will not need to try to "hold back" his pullets. In every flock that has been bred for early maturity and heavy production there will always be a few precocious pullets. That condition is inevitable.

GRANDIN'S GROWING MASH does not bring the pullets to productive maturity too soon. It develops their bodies naturally and insures them the strength, size and vitality for continued production.

GRANDIN'S GROWING MASH may be purchased with or without COD-LIVER OIL.

The change from **GRANDIN'S GROWING MASH** to **GRANDIN'S LAYING MASH** should be made gradually when the pullets have reached the age of six months.

GRANDIN'S SCREENED SCRATCH FEED

When the pullets are housed for the winter the variety in diet which they were able to obtain in the open spaces can no longer be had. As nearly as it is possible for him to do so the poultryman must supply that need. He will find that **GRANDIN'S SCREENED SCRATCH FEED**, owing to the *variety* and high *quality* of the grains which it contains, will go a long way towards *economically* supplying the balance in rations needed to keep his birds healthy and in continued production.

The layers should have before them *at all times* grit (preferably granite grit), oyster shells, charcoal, *clean water* and **GRANDIN'S POULTRY GREEN FOOD**.

**AVOID SUBSTITUTES. Look for the RED FLAG—
"GRANDIN'S MARK OF QUALITY"**

GRANDIN'S LAYING MASH

WITH BUTTERMILK—COD-LIVER OIL

GUARANTEED ANALYSIS

Protein	20%
Fat	4%
Fiber	8%
Carbohydrates	50%

COMPOSED OF

Dried Buttermilk, Concentrated Cod-liver Oil, Ground Meat and Bone, Fish Meal, Corn Gluten Feed, Corn Gluten Meal, Yellow Corn Meal, Hominy Feed, Alfalfa Meal, Wheat Bran, Wheat Middlings, Pulverized Heavy Oats, Calcium Carbonate and Salt.

In the manufacturing of **GRANDIN'S LAYING MASH** we have taken into consideration both the hen and the poultryman. We have prepared a feed which fulfills the needs of the good hen to keep her body in perfect health and at the same time enable her to produce heavily.

We have considered the poultryman by keen buying of first quality raw material and by keeping down to a minimum overhead expenses, in order to sell a feed which is right in every detail at the lowest possible figure.

GRANDIN'S LAYING MASH does not force egg production but will make your hens lay every egg that their breeding and care will warrant. At the end of the year you will find your birds in good flesh and condition, and you will have no fault to find with the vitality of their offspring. *A year with GRANDIN'S* will prove to your satisfaction that you are using a line of poultry feeds that stand the test of time.

As to the quality of each and every ingredient which goes into the making of **GRANDIN'S LAYING MASH** we remove our hats to no one. We do not use dried milk, but *dried buttermilk* entirely—one of the very best standard brands on the market. We use Nopco XX Cod-liver oil, thus passing on to our customers the benefit derived from exhaustive studies in vitamins by a large concern. Our grains are all carefully recleaned and of the highest quality. Our mixers are large and do their work thoroughly. In short, we have left no stone unturned in our efforts to produce a line of feeds that will enable the poultryman who uses them to get a profit from his labor.

The crucial testing time is at hand. The man who puts over his poultry project now is going to be rated as the outstanding man and the solid foundation on which the poultry industry of the future will rest. This is not the time for experiments in home mixing, nor is it the time to look to so-called cheap feed to offset present low values of poultry products.

Quality of high standard—the kind that gives results must be adhered to and the poultryman must see to it that he gets that **HIGH QUALITY**. You will find it in **GRANDIN'S LAYING MASH**.

GRANDIN'S POULTRY GREEN FOOD

COMPOSED OF FINE QUALITY SHREDDED ALFALFA,
DRIED BEET PULP, CANE MOLASSES

GRANDIN'S POULTRY GREEN FOOD is a **ROUGHAGE** food which enables the layers to derive the utmost benefit from their concentrated rations, because it supplies at a very low cost the *bulk* which is lacking in the modern mashes. It is a back-to-Nature food which has long been needed.

The poultryman who has been troubled with high winter mortality in his flock, cannibalism, feather pulling, prolapsus, pick-outs, and blood spots will be greatly pleased with the results obtained by the continuous feeding of **GRANDIN'S POULTRY GREEN FOOD**. *Fresh blood contains much available iron which is an essential element of GRANDIN'S POULTRY GREEN FOOD.*

There are decided advantages in using dried greens in place of home-grown greens as a source of vitamin A because they can be grown more cheaply under specialized conditions and the poultryman can feed them *every day* in the year.

Vitamin A is the growth element found in green foods. Eggs from layers amply supplied with this vital element are much stronger in fertility. Vitamin A can be provided for layers in no better way than in **GRANDIN'S POULTRY GREEN FOOD**.

The U. S. Department of Agriculture tells us that the best way to avoid blood spots in eggs is to use less forcing mash, and to feed green food liberally. This is one of the many reasons why the poultryman will find that **GRANDIN'S POULTRY GREEN FOOD** is a profitable investment. Together with **GRANDIN'S LAYING MASH** a strong combination is formed for real profit.

GRANDIN'S POULTRY GREEN FOOD should be kept before the layers at all times in open hoppers, preferably those with wire grill cover. Do not expect that birds will consume a large quantity of this food. One and one-half pounds is about the average daily consumption of one hundred layers. That amount, owing to its bulk, *costs very little, but the returns are big.*

During severe winter weather when the body weight of the layers shows a tendency to decline, or during the breeding and hatching season when stronger fertility of the eggs is desired, we recommend the use of a moist mash composed of six parts **GRANDIN'S LAYING MASH** and one part **GRANDIN'S POULTRY GREEN FOOD** by measure. This mash should be mixed to a crumbly consistency with milk, and fed at noon, placing it on top of the dry mash, and in such quantity that it will be entirely eaten within a period of one-half hour. If natural milk is not available dried skim milk or buttermilk may be used at the rate of two pounds per hundred birds, and enough water added to attain the proper consistency.

GRANDIN'S COMPLETE LAYING RATION

GUARANTEED ANALYSIS		COMPOSED OF	
Protein	15%	Dried Buttermilk, Concentrated Cod-liver	
Fat	4%	Oil, Ground Meat and Bone, Fish Meal, Corn	
Fiber	7%	Gluten Meal, Alfalfa Meal, Ground Yellow	
Carbohydrates	50%	Corn, Hominy Feed, Ground Wheat, Pulver-	
		ized Barley, Pulverized Oats, Wheat Bran,	
		Wheat Middlings, Calcium Carbonate and Salt.	

Since the last edition of "Simplified Poultry Keeping" was published we have placed **GRANDIN'S COMPLETE LAYING RATION** on the market. This was not done until we had satisfied ourselves by careful tests at the **GRANDIN DEMONSTRATION FARM** that this feed would accomplish all that any feed of this type on the market would do "and then some" any month in the year.

While we are not in sympathy with the method of feeding complete rations from start to finish, our experiments have convinced us that there is a time and place where the poultryman can use **GRANDIN'S COMPLETE LAYING RATION** to a good advantage.

The poultryman who has used the mash and scratch system of feeding during the winter often finds it difficult to cut down on his feeding of hard grains during the summer months. His layers do not need the same amount of heat-producing feeds that they did during the cold months. Leghorns more than the American breeds seem to be adversely affected by the excessive feeding of hard grains during the summer months. Then too, this is the poultryman's busiest season. The growing stock demands a large proportion of his time and he must spend as little time as possible with his layers.

Layers will maintain their body weight and condition when fed **GRANDIN'S COMPLETE LAYING RATION** during the summer months. It often happens that production is materially increased.

If you are already a feeder of complete rations, try **GRANDIN'S COMPLETE LAYING RATION**. You will soon be convinced that it is the *best* of its type.

THE CONTROL OF POULTRY DISEASE

In order to make a financial success of poultry keeping it is not necessary to be a well-trained pathologist. It is imperative, however, in order to keep the various poultry diseases under control to follow a program which shall have as its objective the development of the flock under one's control into as good physical condition as possible.

The poultryman should strive diligently to feed and care for his stock in such a manner that it will have the vitality to resist disease. If he is a buyer of day-old chicks his investment should, like any other, be intelligently made. Do not take anyone's word. Go and see the man from whom you contemplate buying your day-old chicks. Look over the flock and take note of their surroundings. If both the breeding stock and the man who owns them meet your expectations that is the place to buy. If you are not suited drive on until such time as you are able to find what you want. Much gas has been burned for less business-like purposes.

Chickens from healthy, rugged parent stock, kept in clean, sanitary surroundings, *without crowding*, will seldom be attacked by disease. In the best of flocks, birds will die occasionally. These are individual cases, and the poultryman should not be alarmed by them.

No matter how well bred a flock of chicks may be there will always be a few inferior ones. As the flock develops there will be others that will fail to make the grade. Poultrymen often make the mistake of keeping these birds with the hope that they may "come along". As a matter of fact, they never make profitable growth. They should be killed and burned as soon as they are discovered, because birds of this type are *very often* the medium through which disease is brought into the flock.

The poultryman should not lean too heavily on drugs to keep his flock in good health. Before spending much of his hard-earned money for drugs or vaccines he should consult his State Pathologist. Much harm can be done by vaccines in the hands of the uninitiated. The Poultry Department of every State College maintains a group of trained specialists, and in most states, pathologists as well. In case the poultryman finds himself in trouble it is advisable for him to consult these specialists. His taxes help provide the funds to pay their salaries. They will gladly cooperate with him and help him to the best of their abilities.

Bi-carbonate of Soda (Saleratus), Milk, and Epsom Salts, are still the standard remedies for poultry and have never yet been beaten in the field which they are supposed to cover.

COMMON POULTRY DISEASES

LARYNGOTRACHEITIS (commonly called Contagious Bronchitis)—The acute type of this disease is one most to be dreaded by the poultryman. It is spread mainly through contact with live birds, but may be spread through infected crates or bags. In buying mature stock for breeding purposes the poultryman should be careful to isolate them for a period of four weeks before putting them in his own flock. The same method should be followed with birds that are brought back from poultry shows and egg-laying contests. "Contagious Bronchitis" spreads very rapidly and unless dealt with quickly the death of a large part of the flock is sure to follow. One of the very bad features of this disease is that when it has once attacked a flock it is likely to appear again on that farm. For that reason the poultryman should be very careful that it does not gain a foothold on his place.

There are two treatments for this disease which seem to be reasonably effective—the vaccine treatment and the spray treatment. There are a number

of these sprays on the market put up by reliable manufacturers. If the vaccine treatment is to be used the poultryman who is not sure of his ground should at once seek the aid or advice of his State Pathologist. Prompt action must be taken whatever method is to be followed in order to get results that amount to anything at all.

CHICKEN POX—Chicken pox is a disease much to be dreaded, therefore, one which the poultryman should guard against carefully. Buildings and grounds should be kept in a clean and sanitary condition. Drafts and crowding should be avoided.

Birds afflicted with chicken pox have the symptoms of colds. Along with this condition eruptions appear on the comb, wattles, and face. These eruptions after a time become dry scales which cover raw sores. Production immediately ceases because the birds are downright sick.

Vaccination as a preventive measure against chicken pox has proven very satisfactory. The birds should be vaccinated between the ages of twelve and sixteen weeks. If one has never vaccinated for chicken pox he should get the advice of his county agent before making the attempt.

When a flock is suffering from an outbreak of chicken pox and the owner does not wish to vaccinate he should immediately give his birds a dose of epsom salts at the rate of one and one-half pounds to each one hundred. The birds will lose their appetites and in order to increase their food consumption a wet mash using semi-solid buttermilk should be given them at noon in such amount that it will be eaten within one-half hour. Ten pounds of dried milk should be added to the regular mash. Hard grains should be fed sparingly. Dusting the birds while on the roost with H-T-H (15) seems to have a decidedly beneficial effect. Germ X and B. K. are also effective when sprayed on the birds at night.

VENT GLEET—Vent Gleet is a venereal disease of fowl. There is swollen condition around the vent accompanied by an offensive odor. It often happens that there is a whitish covering over the skin around the vent. The bird voids frequently and the droppings are liquid and foul smelling.

Vent Gleet is a difficult disease to treat. As a rule, as soon as the poultryman discovers a bird in his flock so afflicted, he would be better off to kill her at once. She should be removed immediately from the flock when males are present for this disease is liable to be spread rapidly by the cockerel or rooster in breeding.

It sometimes happens that birds are cured of Vent Gleet by washing the affected parts with an antiseptic solution followed by the application of carbolated vaseline.

FAVUS—This disease appears more often among pullets in the fall. It is caused by a fungus which as it spreads over the bare parts of the head gives the afflicted bird a pale appearance. It is a contagious disease and as soon as the poultryman discovers a case he should remove the bird at once.

It frequently happens that a cure may be effected by the application of carbolated vaseline in cases where the disease has not spread to the feathers.

BROODER PNEUMONIA—This is another chick disease that has become serious and more common during the past few years. It is sometimes called aspergillosis. This disease also attacks adult stock but more particularly chicks at the age of from one day to about four weeks.

The causes are drafts, exposure, chilling, uneven temperature and dampness. The spores from a very common fungus growth found frequently in litter straw and grains is probably largely responsible for its common occurrence.

External symptoms in chicks are sleepiness, dumpishness, rapid breathing and drooping wings. The above symptoms are general and a post-mortem examination is, in most cases, necessary to determine the trouble. Upon opening the chicken and examining the lungs you will find a darkened and congested condition accompanied by small yellowish tubercles. In some cases, these tubercles

are found in the liver, mesentery and intestines. On the other hand, it is sometimes difficult to locate any tubercles at all in some diseased specimens.

According to the best authorities no treatment has as yet been recommended. This disease is fatal in practically every case. This is one of the many instances when rigid measures of sanitation and careful inspection and handling of litter and food is a profitable investment of time.

COCCIDIOSIS—Coccidiosis like several other poultry diseases was practically unheard of among poultrymen a few years ago. Now it has become common and is causing a high mortality each year in the flocks of growing chicks.

It usually occurs in chicks between the ages of three and ten weeks. This is the so-called acute form. Dr. E. E. Tyzzer of the Harvard Medical College as a result of extended investigation on this subject arrives at the conclusion that there are three distinct species of *Coccidia* which affects chickens, *acute*, evinced by bloody droppings and congested caeca, *intestinal* and *chronic*.

Acute Coccidiosis often attacks a flock of birds without warning. Sometimes bloody droppings will be observed before any chicks appear sick. It more frequently happens that they will suddenly begin to look unthrifty, drooped wings, crow-headed appearance, listless and wobbly. *Immediate action* must be taken.

Chicks afflicted with Acute Coccidiosis are very sick. If your fires have gone out and the weather is cool, they should be renewed, as the afflicted chicks must be kept warm. They should be "flushed" at once. The MILK FLUSH is administered by adding 20 pounds of dried milk to 100 pounds of whatever mash you may be using. This should be continued for three days. The SODA FLUSH is administered by adding a quarter of a pound of Bi-Carbonate of Soda (Saleratus) to each five gallons of drinking water for one day only.

EPSOM SALTS as a flush has proven very effective. One pound of Epsom Salts to each 500 pounds of chickens, in the drinking water for one day is the generally accepted dose.

In every case where it is possible to get natural soured milk this should be kept before the chicks in wooden or crockery receptacles. If this cannot be obtained the use of semi-solid buttermilk is advisable.

In order to combat this dreaded disease successfully, a rigid sanitary program must be carried out for at least ten days. The floors should be thoroughly cleaned each day and sprayed with a coal tar by-product disinfectant such as Creonoid, and the litter renewed.

CHRONIC COCCIDIOSIS—Chronic Coccidiosis does not appear until the chicks are well along toward maturity and persists throughout the winter. Birds afflicted with this disease have a sluggish appearance, pale combs, and lose weight. The head becomes long on account of emaciation, and the color leaves the shanks. An examination of the intestinal tract reveals a highly inflamed condition.

A liberal use of sour milk or semi-solid buttermilk seems to be the most effective treatment for Chronic Coccidiosis. Badly affected birds should be removed from the flock and clean ranges and houses provided. Do not raise chicks from flocks that are badly afflicted with Chronic Coccidiosis.

RANGE PARALYSIS—Range Paralysis is one of the so-called "new" diseases and is little understood. It has come on the scene since poultry has been bred in large numbers and like many other poultry diseases is the result of *congestion* and *mass production*. In most cases a post-mortem examination will reveal the presence of worms or coccidia. In some cases both will be found. Treatment for this disease should consist of a Soda Flush. Should worms be found the soda flush ($\frac{1}{4}$ lb. to 5 gallons of water for one day) should follow treatment for worms. The range should be cleaned or the birds removed to a new one. Losses from Range Paralysis can be avoided by careful breeding and good care.

CANNIBALISM AND FEATHER-PULLING IN CHICKS—A majority of poultrymen experience trouble with cannibalism and feather-pulling. The

crowding of chicks in confinement is the primary cause of this trouble. It can be avoided by keeping the chicks busy by feeding cabbage, beets, etc. Be sure that the birds are not kept too warm and that plenty of feeding and drinking space is provided. The early feeding of hard grains in *clean* litter serves as a preventative. In case of an outbreak the room should be slightly darkened and those chicks that have been attacked painted with pine tar or a commercial anti-pick.

CANNIBALISM AND FEATHER-PULLING IN MATURE FOWL—

A good method to use to control this trouble is to remove the tip of the upper beak of birds that do the picking. The edge of the upper beak is cut in $\frac{1}{8}$ to $\frac{3}{16}$ of an inch from the tip; this depends on the size and length of the tip. By prying and pulling with the flat side of the knife the point of the beak is removed. It is better to tear it in this way than to cut it. Tipping the beak does not interfere with a bird's ability to eat.

Pine tar or some good commercial anti-pick should be applied to the birds that have been picked.

WORMS—A great deal of trouble that flock owners experience is due to worms. Intestinal, round, and tape worms are the chief offenders. There are a great many good commercial remedies on the market for worms. These include both flock and individual treatments.

Do not let the worms rob you of your poultry profits. They absorb the food nutrients in the intestinal tract, and thus weaken your birds so that they fall ready victims to various diseases.

COLDS—Colds are caused by improper housing conditions; exposure to cold or dampness, crowding on roosts at night and subsequent sweating. Symptoms: sneezing, watery discharge from eyes and nostrils.

TREATMENT—Give Epsom Salts, one pound to 100 hens in drinking water for one day. Add Germ-X, B. K., or Sterilac to drinking water according to directions on bottle.

ROUP—The term "roup" has been applied to nearly all poultry diseases accompanied by the symptoms described as "frothy eyes and running discharge from the nostrils." All colds may have these symptoms, but every cold is not roup. Roup is always accompanied by the familiar foul smell. The odor is peculiar to the disease, and is very lasting and penetrating and when once recognized, there is very little danger of ever mistaking any other disease for roup. The general symptoms are: Discharge at mouth and nostrils, swelled head, offensive breath, difficult breathing, canker spots and exhaustion. Roup is the result of close air, extreme variations in temperature between day and night, damp houses, draughts, improper food and filthy water.

TREATMENT—When the disease first makes its appearance, remove every sick bird from the flock as soon as you can find it, clean up and use a good disinfectant, like Creolin, Sulpho-Naphthol or Creonoid, freely about the houses and runs. If the disease is taken in hand early it can be stamped out by using a Creolin spray. Mix one teaspoonful of pure Creolin in a gallon of water. With a spray pump, spray this solution about the poultry houses after the birds have gone to roost. Spray it about the heads of the birds so that they may inhale the vapor. It will cause a great deal of sneezing and coughing. This treatment every night for ten days or two weeks will cure many cases of colds and mild cases of roup. Use B. K., Germ-X or Sterilac in drinking water, one teaspoonful to each gallon of water.

LICE—Beware of lice! There can be no success with poultry if they are troubled with lice. A lousy hen is a poor layer, eats much, but puts on no flesh and easily falls prey to disease.

TREATMENT—Paint the roosts with Carbolinum and spray the nests with Creonoid or some other good liquid spray. The dropping boards should be kept clean. Nicotine Sulphate or "Black Leaf 40" is a very effective treat-

ment for lice. This is applied with a brush to the roosts about one hour before the birds go to roost. The fumes from the nicotine permeate the hen's feathers and the lice are killed. This should be done when the pullets are housed for the winter. Another application in April and another in July will serve to keep the birds free from lice. Care should be taken to see that the room is well ventilated on the night that "Black Leaf 40" is applied.

MITES—Mites in the laying house, brooder house, and range shelter are a genuine pest that must be disposed of. No one knows from whence they come but with the advent of warm weather they suddenly appear. They are small and grey in color but when filled with blood are red, hence the commonly accepted name "Red Mites". The best method of control is to paint the roosts, supports, nests, etc., with Carbolinum. There are several good red-mite sprays on the market which should be used in a compressed air sprayer in order to reach the cracks and crevices where they hide during the day.

PROLAPSUS OF THE OVIDUCT—Intensive breeding for production and the feeding of too stimulating rations are the primary causes of this trouble which causes the modern poultryman a lot of worry and loss. As a rule there are more cases of prolapsus in the fall when the pullets are just put in the laying house and again in the spring when the birds are beginning to feel the strain of heavy production.

In a flock which is bred and selected for production there will always be an occasional case of prolapsus. Whenever it appears to a serious extent the amount of corn in the ration should be cut down. **GRANDIN'S SCREENED SCRATCH FEED** is composed of hard grains in the right proportions. Treat the flock by flushing with epsom salts (one pound to every 100 birds in the drinking water for one day). An abundance of green feed should be provided. Semi-solid buttermilk liberally fed on the scratching grains in troughs will prove effective. A laxative diet is needed.

SOFT-SHELLED EGGS—Flocks that are properly managed and fed on **GRANDIN'S LAYING MASH** and **GRANDIN'S SCREENED SCRATCH FEED** seldom lay soft-shelled eggs. **GRANDIN'S LAYING MASH** with **COD-LIVER OIL** is properly balanced as to minerals and vitamins.

BLOOD SPOTS IN EGGS—Blood spots in eggs are caused by the rupturing of small blood vessels in the oviduct. Sudden fright or a sudden jolt may rupture the follicle. It frequently happens that poultrymen have the dropping boards too high for the larger breeds. Constipation and excessive fat are also contributing causes. A laxative ration including a liberal amount of green feed will help to decrease the blood spots in eggs, but by all means see to it that the dropping boards and roosts are not too high from the floor.

N O T E

We have several well trained men who will be pleased to give you the benefit of their experience acquired by coming in contact with thousands of poultrymen and observing the workings of various methods in poultry husbandry and treatment of diseases. If you should like their advice inform your local **GRANDIN** dealer or write to

POULTRY SERVICE DEPT.
D. H. GRANDIN MILLING COMPANY
JAMESTOWN, N. Y.

**AVOID SUBSTITUTES. Look for the RED FLAG—
"GRANDIN'S MARK OF QUALITY"**

TURKEY FEEDING AND MANAGEMENT



The value of wire platforms in the rearing of turkeys cannot be overestimated. In fact the adoption of this method has been the prime cause of the renewal of interest in the turkey industry.

For several years turkey raising in the East was practically given up because the flocks were so afflicted with blackhead and other diseases that the business became unprofitable. In the light of recent discoveries, however, turkey raising has again come to the front in the East as a large and profitable branch of agriculture.

The expense and amount of labor involved in order to make a fair yearly profit is not as great in the case of turkeys as in that of poultry. The successful rearing of poults, however, entails careful attention to details, no one of which can be safely neglected. This is without doubt the chief reason why more people are successful with poultry than with turkeys.

In the paragraphs which follow we shall endeavor to describe the practices in rearing turkeys which have proven their worth. What to feed turkeys is no longer a problem. Scientific study of nutrients has taken care of that.

Poults should be left in the incubator about twenty-four hours after the hatch is over. The temperature of the incubator should be lowered to about 100 degrees before they are transferred to the brooder house. A low enclosure preferably of one-half inch mesh hardware cloth should be placed around the brooder stove at a distance of two feet from the edge of the hover. Later this can be used to "round off" the corners.

Young turkeys are very liable to huddle and every precaution must be taken to prevent them from doing so. For this reason it is unwise to leave coal hods, buckets, or anything else behind or around which they may huddle.

When the poults are placed in the brooder house, they should have immediate access to clean water from which the chill has been removed, and a sprinkling of fine chick grit, charcoal and finely ground oyster shells, spread on paper or placed in paper plates.

For the first two or three days feed **GRANDIN'S TURKEY STARTER** in little piles on papers, or in paper plates four or five times a day, leaving the feed there about one-half hour, then removing it until the next feeding time. After the third day keep **GRANDIN'S TURKEY STARTER** before them in suitable hoppers until they have reached the age of eight weeks. Then gradually change to **GRANDIN'S GROWING MASH**. The hoppers should not be allowed to become empty. At twelve weeks of age the poults may be fed a small amount of **GRANDIN'S INTERMEDIATE CHICK FEED**. Ten days later this may be gradually changed to **GRANDIN'S SCREENED SCRATCH**

FEED and the amount gradually increased. Better growth is obtained when the poults eat heavily of Mash.

Our experience leads us to believe that the best results are obtained when turkeys are reared in groups of not more than 150. A brooder house twelve feet square is required for this number. A larger one would be better.

A cool, well ventilated house, with a good fire in the stove lessens the danger of huddling and induces better growth and feathering. As another preventative for crowding, roosts should be provided when the poults are four weeks old. These roosts should be attached to the wall so that they may be elevated when cleaning the floor. A small (10 watt) bulb or a lantern suspended over the brooder stove is a good investment, as the poults spread out better when bedded down for the night and are less liable to stampede when disturbed by strange noises.

Clean sharp sand makes the best litter for poults, only a slight sprinkling should be put on the floor. The floors should be thoroughly cleaned and the litter renewed *every* day.

It has been clearly proven that the wire platform is a necessary part of the program in raising turkeys. The wire platform, or sun porch, should contain as many square feet as the floor of the brooder house. If it is larger so much the better. It should be on a level with the opening to the brooder house. These openings as a rule are not large enough. They should be sixteen inches wide and fourteen inches high. The floors of the sun porch should consist of three-quarter-inch mesh hardware cloth. If it is enclosed with slats, far enough apart for the turkeys to put their heads through for two feet, covered feeding troughs may be placed around the outside on brackets. The remainder of the fence may be poultry wire. On hot days shade that will be very acceptable to the poults may be had by throwing a piece of canvas, or whatever one may have, over the top of a portion of the enclosure.

Artificial heat should be dispensed with as soon as the age of the birds and weather conditions permit.

During the entire growing period the turkeys should have granite grit, oyster shells, and charcoal before them at all times. After the first week green food should be provided such as cabbage, lettuce, Swiss chard, rape, etc.

Turkeys should be put out on range when twelve weeks old.

Turkeys require no house on the range. All they need is a fairly high set of roosting poles (eight or ten feet from the ground) with one or two intermediate poles on which to break up their flight. The roosting place should be enclosed with wire and the door kept closed during the day in order to keep the turkeys away from the accumulated droppings.

In order to maintain good health and make rapid growth turkeys require a large amount of succulent green food. For that reason it is a good plan for the turkey raiser to plant a generous supply of lettuce, rape, and cabbage to supplement the range when the grass gets tough and dry.

It is advisable to water turkeys on the range in long troughs set on a platform elevated a foot from the ground and covered with three-quarter-inch hardware cloth. The feed hoppers should be moved a few feet daily in order to keep the turkeys from eating contaminated mash.

Whole Corn should be added to **GRANDIN'S SCREENED SCRATCH FEED** about six weeks before the turkeys are sent to market.

In most markets today the nine- and ten-pound turkeys are the best sellers. The lower price on large turkeys means more work and expense for smaller returns. The turkey raiser should have this condition of affairs in mind, whatever his outlet may be, when he arranges his hatches.

The turkeys that are carried over as breeders should be fed **GRANDIN'S GROWING MASH** until the middle of February. At that time they should be changed to **GRANDIN'S LAYING MASH**. If **GRANDIN'S POULTRY GREEN FOOD** is kept before them the fertility of the eggs and the strength of the poults will be all that can be reasonably desired.

GRANDIN'S TURKEY STARTER

WITH BUTTERMILK—COD-LIVER OIL

A COMPLETE RATION

GUARANTEED ANALYSIS

Protein	20%
Fat	4%
Fiber	7%
Carbohydrates	50%

COMPOSED OF

Pure Dried Buttermilk, Concentrated Cod-liver Oil, Ground Meat and Bone, Fish Meal, Ground Whole Yellow Corn, Ground Whole Wheat, Pulverized Heavy Oats, Pure Wheat Bran, Pure Wheat Middlings, Calcium Carbonate and Salt.

GRANDIN'S TURKEY STARTER is so balanced as to adequately meet the demands of the up-to-date turkey raiser. Modern methods of raising turkeys as described in this booklet make it imperative to manufacture a feed which will contain the right nutrients in exactly the right proportions. This has been accomplished in **GRANDIN'S TURKEY STARTER**. It satisfies the poults and you will not hear them "yip" as they are prone to do when the feed does not fulfill their requirements. They are **CONTENTED** when fed on **GRANDIN'S TURKEY STARTER**. Every ingredient is **RIGHT** and the **BALANCE** is **RIGHT**.

NO BETTER FEED HAS YET BEEN DEVISED TO GROW WELL
FRAMED HUSKY TURKEYS than **GRANDIN'S GROWING MASH**



GRANDIN-fed turkeys have the qualities which bring the owner top market prices.

"PRACTICAL TESTS PROVE GRANDIN'S QUALITY"



A bird's-eye view of the GRANDIN DEMONSTRATION FARM.

THE GRANDIN DEMONSTRATION FARM

The **Grandin Demonstration Farm** located at Kennebunkport, Maine, was established with the purpose of showing the poultrymen how the **Grandin** ideas of flock management work out in practice. A thorough biological test of feeds are made and the consumer is able to satisfy himself as to the sort of birds that can be raised on **Grandin's**.

About two thousand chicks are raised yearly on the **Grandin Demonstration Farm**. Seven hundred layers are kept during the winter, one hundred of these are Barred Plymouth Rocks, one hundred and twenty-five are White Leghorns and the remainder is composed of Rhode Island Reds. These three breeds are kept because, commercially, they are the leaders. There is also another reason for keeping these three breeds. We realize that there are some variations in the physical demands of Reds, Rocks, and Leghorns, especially as to management. In each case we want to know just what should be done to get the best results.

Neither the buildings or equipment on the **Grandin Demonstration Farm** are elaborate. Owing to the fact that a very large percentage of the flocks in the United States are in the hands of the small poultryman, we have expended only such an amount of money for buildings and equipment as it would be reasonable for the poultryman to spend who expects to make a living from his undertaking.

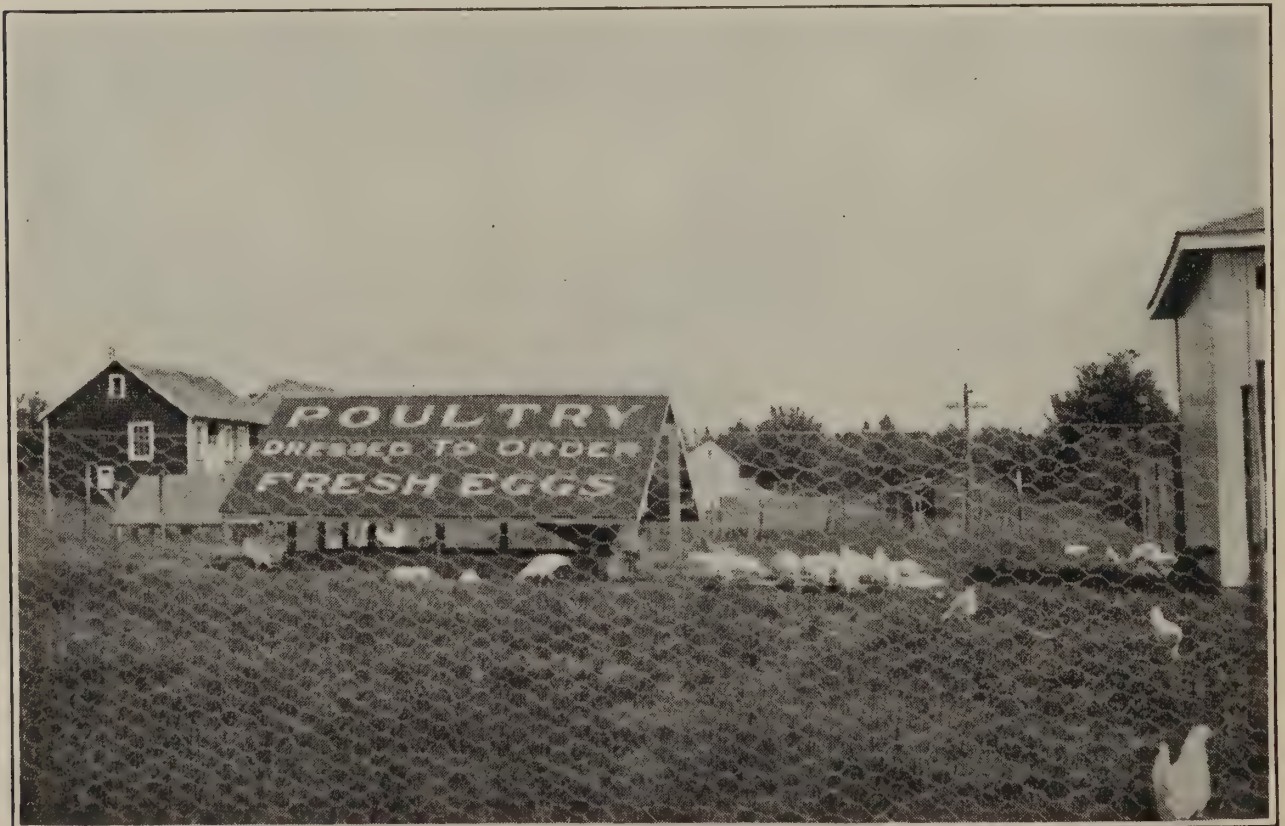
Kennebunkport is a beautiful summer resort. If you have never visited this town you will get a lot of pleasure out of the trip. Visitors are welcome at the **Grandin Demonstration Farm** every day in the week. There is always someone on hand to show visitors about the farm and to answer any questions that may be asked.



Buck is standing guard over the eight hundred pullets on this range at the **GRANDIN DEMONSTRATION FARM**. If you like vigorous, well colored R. I. Reds you will enjoy looking these pullets over.



A few of the two hundred Barred Plymouth Rock pullets on the GRANDIN DEMONSTRATION FARM. These pullets are sturdy and uniform in development.



There are two hundred and fifty White Leghorn pullets on the GRANDIN DEMONSTRATION FARM. They are "peppy" and well feathered. Come and see them.



POULTRY SERVICE DEPARTMENT



Are you taking advantage of the services of our Poultry Service Department? This service is maintained for the benefit of poultry raisers, to assist them with their problems of feeding, housing, management, diseases, etc.

There is no charge for this service.

Address:

POULTRY SERVICE DEPT.
D. H. GRANDIN MILLING COMPANY
JAMESTOWN, N. Y.

FREE FOR THE ASKING

Egg Record Cards.

Trap Nest Record Cards.

Plans for: Grandin's Range Shelter.

Grandin's Permanent Brooder House.

Grandin's Laying House.

When writing please state number desired.

IN CONCLUSION

The reader of this edition of "SIMPLIFIED POULTRY KEEPING" has noted that few changes have been made in the text copied from the edition of 1933. The additional information, we hope, makes this edition more valuable. While assembling the material for this booklet the members of the Poultry Service Department had in mind the fact that, as conditions are today, the poultryman needs practical rather than theoretical information.

We received many letters of recommendation concerning the 1933 edition of "SIMPLIFIED POULTRY KEEPING". We would like to know what the readers think of this edition. If you like it tell us so, and why. If you have any criticism to make we will be glad to get that too, because we want the next edition of "SIMPLIFIED POULTRY KEEPING" to be better than its predecessors.

POULTRY SERVICE DEPARTMENT
D. H. GRANDIN MILLING CO.
JAMESTOWN, N. Y.

The Mark  *of Quality*

The COMPLETE LINE *of* **GRANDIN'S FEEDS**

A FEED FOR EVERY NEED

G R A N D I N , S	STOCK FOOD
	SWEETENED HORSE FEED
	24% BALANCED DAIRY RATION
	TWIN-SIX DAIRY FEED 22%
	SWEETENED TWIN-SIX DAIRY FEED
	MILK MAKER WITH BEET PULP 20%
	32% DAIRY FEED
	SWEETENED 24% DAIRY FEED
	SWEETENED 20% DAIRY FEED
	SWEETENED 16% DAIRY FEED
	PIG AND HOG RATION
	SCREENED SCRATCH FEED
	INTERMEDIATE CHICK FEED
	BABY CHICK FEED
	CHICK STARTER WITH COD-LIVER OIL
	COMPLETE STARTING RATION
	TURKEY STARTER
COMBINED CHICK AND BROILER RATION	
LAYING MASH	
LAYING MASH WITH COD-LIVER OIL	
GROWING MASH	
GROWING MASH WITH COD-LIVER OIL	
POULTRY GREEN FOOD	
COMPLETE LAYING RATION	

*Request **GRANDIN'S FEEDS** from Your Dealer*

BREEDING GUIDE FOR FARM ANIMALS

Date of Service	Mare Will Foal	Cow Will Freshen	Ewe Will Lamb	Sow Will Farrow
Jan. 1	Dec. 6	Oct. 10	May 30	Apr. 22
Jan. 6	Dec. 11	Oct. 15	June 4	Apr. 27
Jan. 11	Dec. 16	Oct. 20	June 9	May 2
Jan. 16	Dec. 21	Oct. 25	June 14	May 7
Jan. 21	Dec. 25	Oct. 30	June 19	May 12
Jan. 26	Dec. 31	Nov. 4	June 24	May 17
Jan. 31	Jan. 5	Nov. 9	June 29	May 22
Feb. 5	Jan. 10	Nov. 14	July 4	May 27
Feb. 10	Jan. 15	Nov. 19	July 9	June 1
Feb. 15	Jan. 20	Nov. 24	July 14	June 6
Feb. 20	Jan. 25	Nov. 29	July 19	June 11
Feb. 25	Jan. 30	Dec. 4	July 24	June 16
Mar. 2	Feb. 4	Dec. 9	July 29	June 21
Mar. 7	Feb. 9	Dec. 14	Aug. 3	June 26
Mar. 12	Feb. 14	Dec. 19	Aug. 8	July 1
Mar. 17	Feb. 19	Dec. 24	Aug. 13	July 6
Mar. 22	Feb. 24	Dec. 29	Aug. 18	July 11
Mar. 27	Mar. 1	Jan. 3	Aug. 23	July 16
Apr. 1	Mar. 6	Jan. 8	Aug. 28	July 21
Apr. 6	Mar. 11	Jan. 13	Sept. 2	July 26
Apr. 11	Mar. 16	Jan. 18	Sept. 7	July 31
Apr. 16	Mar. 21	Jan. 23	Sept. 12	Aug. 5
Apr. 21	Mar. 26	Jan. 28	Sept. 17	Aug. 10
Apr. 26	Mar. 31	Feb. 2	Sept. 22	Aug. 15
May 1	Apr. 5	Feb. 7	Sept. 27	Aug. 20
May 6	Apr. 10	Feb. 12	Oct. 2	Aug. 25
May 11	Apr. 15	Feb. 17	Oct. 7	Aug. 30
May 16	Apr. 20	Feb. 22	Oct. 12	Sept. 4
May 21	Apr. 25	Feb. 27	Oct. 17	Sept. 9
May 26	Apr. 30	Mar. 4	Oct. 22	Sept. 14
May 31	May 5	Mar. 9	Oct. 27	Sept. 19
June 5	May 10	Mar. 14	Nov. 1	Sept. 24
June 10	May 15	Mar. 19	Nov. 6	Sept. 29
June 15	May 20	Mar. 24	Nov. 11	Oct. 4
June 20	May 25	Mar. 29	Nov. 16	Oct. 9
June 25	May 30	Apr. 3	Nov. 21	Oct. 14
June 30	June 4	Apr. 8	Nov. 26	Oct. 19
July 5	June 9	Apr. 13	Dec. 1	Oct. 24
July 10	June 14	Apr. 18	Dec. 6	Oct. 29
July 15	June 19	Apr. 23	Dec. 11	Nov. 3
July 20	June 24	Apr. 28	Dec. 16	Nov. 8
July 25	June 29	May 3	Dec. 21	Nov. 13
July 30	July 4	May 8	Dec. 26	Nov. 18
Aug. 4	July 9	May 13	Dec. 31	Nov. 23
Aug. 9	July 14	May 18	Jan. 5	Nov. 28
Aug. 14	July 19	May 23	Jan. 10	Dec. 3
Aug. 19	July 24	May 28	Jan. 15	Dec. 8
Aug. 24	July 29	June 2	Jan. 20	Dec. 13
Aug. 29	Aug. 3	June 7	Jan. 25	Dec. 18
Sept. 3	Aug. 8	June 12	Jan. 30	Dec. 23
Sept. 8	Aug. 13	June 17	Feb. 4	Dec. 28
Sept. 13	Aug. 18	June 22	Feb. 9	Jan. 2
Sept. 18	Aug. 23	June 27	Feb. 14	Jan. 7
Sept. 23	Aug. 28	July 2	Feb. 19	Jan. 12
Sept. 28	Sept. 2	July 7	Feb. 24	Jan. 17
Oct. 3	Sept. 7	July 12	Mar. 1	Jan. 22
Oct. 8	Sept. 12	July 17	Mar. 6	Jan. 27
Oct. 13	Sept. 17	July 22	Mar. 11	Feb. 1
Oct. 18	Sept. 22	July 27	Mar. 16	Feb. 6
Oct. 23	Sept. 27	Aug. 1	Mar. 21	Feb. 11
Oct. 28	Oct. 2	Aug. 6	Mar. 26	Feb. 16
Nov. 2	Oct. 7	Aug. 11	Mar. 31	Feb. 21
Nov. 7	Oct. 12	Aug. 16	Apr. 5	Feb. 26
Nov. 12	Oct. 17	Aug. 21	Apr. 10	Mar. 3
Nov. 17	Oct. 22	Aug. 26	Apr. 15	Mar. 8
Nov. 22	Oct. 27	Aug. 31	Apr. 20	Mar. 13
Nov. 27	Oct. 31	Sept. 5	Apr. 25	Mar. 18
Dec. 2	Nov. 6	Sept. 10	Apr. 30	Mar. 23
Dec. 7	Nov. 11	Sept. 15	May 5	Mar. 28
Dec. 12	Nov. 16	Sept. 20	May 10	Apr. 2
Dec. 17	Nov. 21	Sept. 25	May 15	Apr. 7
Dec. 22	Nov. 26	Sept. 30	May 20	Apr. 12
Dec. 27	Dec. 1	Oct. 5	May 25	Apr. 17
Dec. 31	Dec. 5	Oct. 9	May 30	Apr. 21



“PRACTICAL

TESTS

PROVE

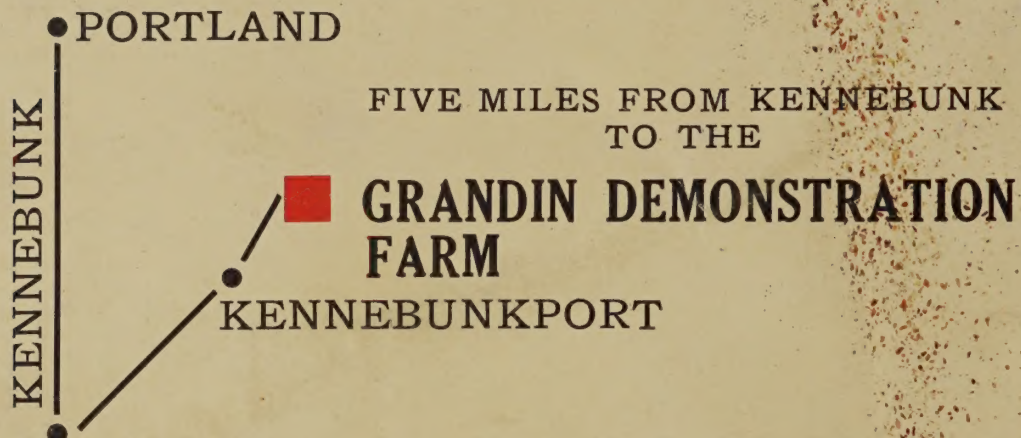
GRANDIN'S

QUALITY”



HORSES: Periods: 48½ weeks or 340 days. Extremes: 307 and 412 days.
CATTLE: Periods: 40½ weeks or 283 days. Extremes: 240 and 311 days.
SHEEP: Periods: 22 weeks or 150 days. Extremes: 146 and 157 days.
SWINE: Periods: 16 weeks or 112 days. Extremes: 109 and 120 days.

HOW TO GET TO THE GRANDIN DEMONSTRATION FARM



VISITORS ARE
ALWAYS WELCOME



U. S. ROUTE No. 1

BOSTON